April 2013

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TEST & MEASUREMENT

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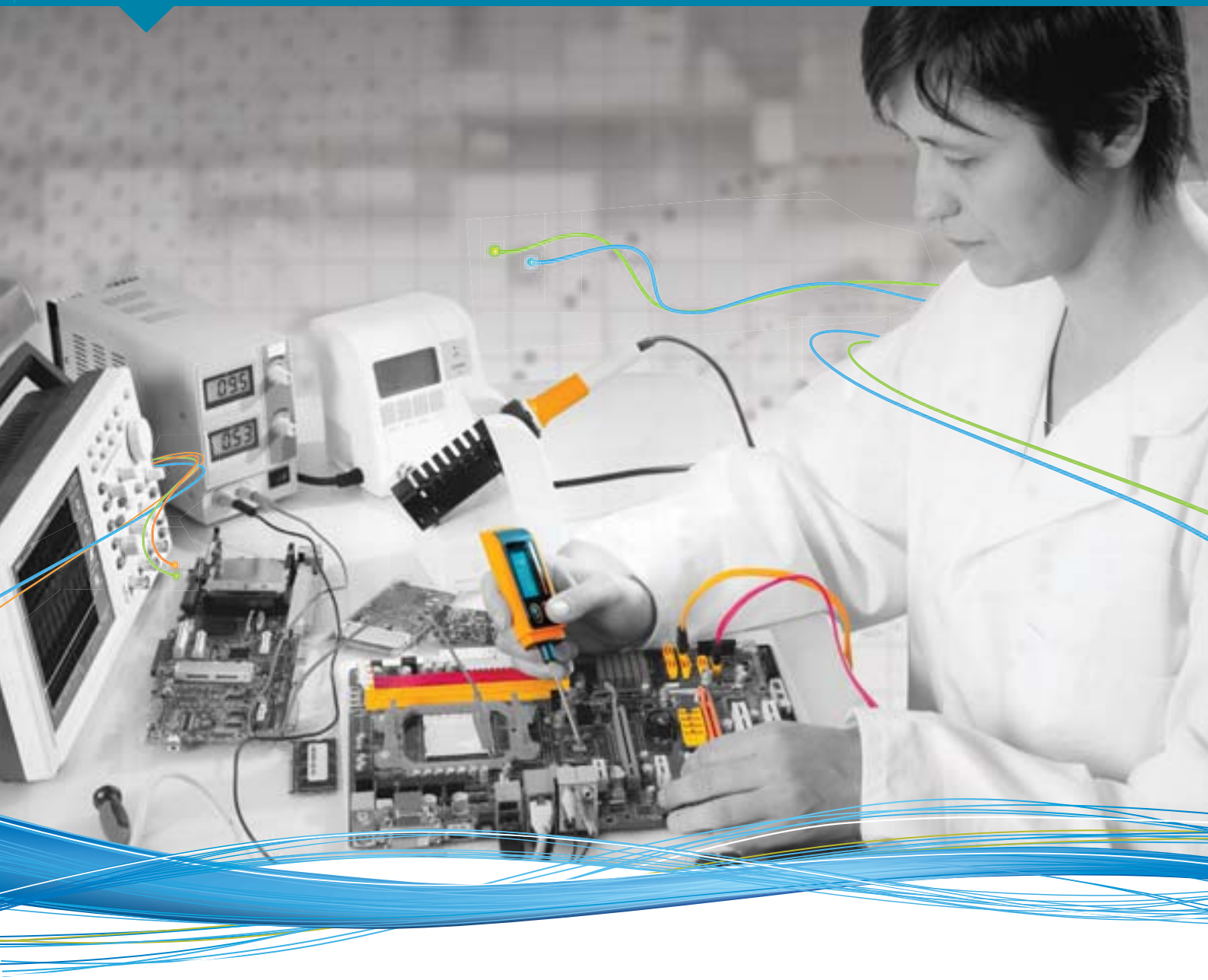

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Handheld Digital Multimeters

TENMA

NEW

This DMM is a very reliable hand-held digital multi-meter. The meter has a large 3.5" LCD that highlights to the user which sockets to plug test leads into. The meter comes complete with test leads and comprehensive instruction manual.

- Diode test
- Continuity buzzer
- Data hold
- Low battery display
- Transistor
- Full icon display
- Sleep mode

Kit Contents: Multimeter, test lead, battery, english manual, point contact temperature probe, multi-purpose Socket and holster.

	72-9385		
AC Current	20A	Resistance	20Mohm
DC Current	20A	Temperature	-40°C to +1000°C
AC Voltage	750V	Display Count	1999
DC Voltage	1kV	Power	9V Battery
Capacitance	100µF	LCD Size	60 x 54mm
Frequency	20kHz	Weight	350g
		Dimensions	179 x 88 x 39mm

Mftrs. List No.	Order Code	Price Each 1+
72-9385	**206-0271**	27.89

Silver Care Service Plan

Tektronix

NEW

Minimize downtime with a Tektronix Silver Care plan. You are one phone call away from starting your repair process - no quotes, purchase orders, or approval delays. With a Silver Care plan your instrument gets priority in the queue at the depot, ahead of on-demand repairs.

- Fast turnaround time
- The plans cover all parts, labor, and transportation costs
- Instruments returned to like-new factory performance
- 90-day service warranty
- Includes calibration and adjustments to published accuracy specifications

Mftrs. List No.	Description	Order Code	Price Each 1+
SILV100	DMM4k Series, PWS2k Series, PWS, 4000 Series, TDS1K EDU, TPP0500 & TPP1k	**207-0366**	137.00
SILV200	DMM4k Series, PWS2k Series, PWS, 4000 Series, TDS1K EDU, TPP0500 & TPP1k	**207-0367**	228.00
SILV400	DMM4k Series, PWS2k Series, PWS, 4000 Series, TDS1K EDU, TPP0500 & TPP1k	**207-0368**	363.00
SILV600	DMM4k Series, PWS2k Series, PWS, 4000 Series, TDS1K EDU, TPP0500 & TPP1k	**207-0369**	543.00
SILV900	DMM4k Series, PWS2k Series, PWS, 4000 Series, TDS1K EDU, TPP0500 & TPP1k	**207-0370**	814.00

RoHS Compliant Non-compliant

TBS1000 Series Digital Storage Oscilloscopes

- 25MHz, 40MHz, 60MHz, 100MHz and 150 MHz Bandwidth Models
- 2 Channel Models
- Up to 1 GS/s Sample Rate on All Channels
- 2.5k point Record Length on All Channels
- Advanced Triggers including Pulse Width Trigger and Line-selectable Video Trigger
- 16 Automated Measurements, and FFT Analysis for Simplified Waveform Analysis
- Built-in Waveform Limit Testing
- Automated, Extended Data Logging Feature
- Autoset and Signal Auto-ranging
- Built-in Context-sensitive Help
- Probe Check Wizard
- Multiple-language User Interface
- 5.7 in. Active TFT Color Display
- USB 2.0 Host Port on the Front Panel for Quick and Easy Data Storage
- USB 2.0 Device Port on Rear Panel for Easy Connection to a PC or Direct Printing to a PictBridge®-compatible Printer
- 5 Year Warranty
- The supplied Tektronix OpenChoice software lets you capture oscilloscope screen images, waveform data, and settings from a Microsoft Windows computer

Kit Contents: Oscilloscopes, Passive Probes (one per channel; TPP0101:100MHz for:TBS1022, TBS1042, TBS1062, and TBS1102; TPP0201: 200MHz for: TBS1152), Power Cord, Installation and Safety Manual, User Manuals CD, OpenChoice Software and 5 Year Warranty.

Mftrs. List No.	Description	Order Code	Price Each 1+
TBS1022	Oscilloscope, DSO, 2CH, 25MHz	**225-0021**	343.00
TBS1042	Oscilloscope, DSO, 2CH, 40MHz	**225-0022**	449.00
TBS1062	Oscilloscope, DSO, 2CH, 60MHz	**225-0023**	547.00
TBS1102	Oscilloscope, DSO, 2CH, 100MHz	**225-0024**	726.00
TBS1152	Oscilloscope, DSO, 2CH, 150MHz	**225-0025**	1,000.00
Probes			
TPP0101	Passive, 10X, 100MHz	**184-0969**	49.00
TPP0201	Passive, 10X, 200MHz	**184-0970**	61.00
P2220	Passive, 1X / 10X, 200MHz	**798-4219**	95.00
P6015A	Passive High Voltage, 1000X, 75MHz	**435-2580**	1,410.00
P5100A	Passive High Voltage, 100X, 2.5kV, 500MHz	**187-7504**	354.00
P5200A	Differential High Voltage, 1.3kV, 50MHz	**187-7507**	707.00
P6021	AC Current, 15A, 60MHz	**802-0515**	1,170.00
P6022	AC Current, 6A, 120MHz	**798-6882**	1,260.00
A621	AC Current, 2000A, 5 to 50kHz	**798-6866**	474.00
A622	AC/DC Current, 100A, 100kHz	**798-6874**	478.00
TCP303	AC/DC Current, 150A, 15MHz	**436-0266**	2,090.00
TCP305	AC/DC Current, 50A, 50MHz	**436-0254**	1,110.00
TCP312.	AC/DC Current, 30A, 100MHz	**207-0532**	1,290.00
TCP404XL	AC/DC Current, 500A, 2MHz	**436-0280**	2,840.00
Accessories			
TCPA300	Current, Measurement System Amplifier, 300A	**436-0230**	1,710.00
TCPA400	Current, Measurement System Amplifier, 400A	**436-0278**	1,710.00
TEK-USB-488	Adapter, GPIB-to-USB	**129-5623**	577.00
AC2100	Carry Case	**798-4243**	97.00
HCTEK4321	Hard Transit Case	**129-5624**	595.00
RM2000B	Rack Mount Kit	**129-5625**	288.00

Digital Storage Oscilloscopes

TDS1000B

Performance you need at a price you can afford.
With up to 100 MHz bandwidth and 1 GS/s sample rate, the TDS1000B Oscilloscope Series provides you with affordable performance in a compact design. Packed with standard features - including USB connectivity, 11 automatic measurements, context-sensitive help, probe check wizard and a Lifetime Warranty - the TDS1000B Series oscilloscope help you get more done, in less time.

W=326 H=158 D=229mm Weight = 2kg

- 40 MHz, 60 MHz, 100 MHz bandwidths
- Sample rates up to 1 GS/s
- 2 channels
- Monochrome LCD display
- Removable data storage via front panel USB port
- Seamless PC connectivity via USB device port
- Advanced triggers, including pulse width trigger and line-selectable video trigger
- FFT function standard on all models
- 11 Automatic Measurements
- Multi-language user interface and context-sensitive help
- Direct printing to PictBridge® compatible printers via USB device port

	TDS1001B	1002B	1012B
Display	Mono	Mono	Mono
Mono Display	1/4 VGA backlit passive LCD with adjustable contrast and inverse video		
Colour Display	1/4 VGA passive colour LCD on black background with adjustable contrast		
Bandwidth	40MHz	60MHz	100MHz
Channels	2	2	2
Sample rate	500 MS/s	1GS/s	1GS/s
Record length	2.5k points on all models		
Vertical res.	8-bits		
Vertical sens.	2 mV to 5 V/div		
DC vert. acc.	±3%		
Vertical zoom	Vertically expand or compress a live or stopped waveform		
Max input volt.	300 Vrms CAT II; derated at 20 dB/decade >100kHz to 13 Vp-p AC at ≥3MHz		
Position range	2mV to 200mV/div ±2V; >200mV to 5V/div ±50V		
BW limit	20 MHz		
Input coupling	AC, DC, GND		
Input impedance	1MΩ in parallel with 20pF		
Time base range	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div
Time base acc.	50 ppm		
Horizontal zoom	Horizontally expand or compress a live or stopped waveform		
Operating temp	0 to +50°C		

Description	Mftrs. List No.	Order Code	Price Each 1+
TDS1001B	40 MHz, 2 Channel, Mono	**122-5083**	735.00
TDS1002B	60 MHz, 2 Channel, Mono	**122-5084**	989.00
TDS1012B	100 MHz, 2 Channel, Mono	**122-5085**	1,140.00
Accessories			1+
TEK-USB-488	GPIB to USB Converter	**129-5623**	577.00
AC2100	Soft carry case	**798-4243**	97.00
HCTEK4321	Hard Carry Case	**129-5624**	595.00
RM2000B	Rack Mount Kit	**129-5625**	288.00
TNGTDS01	Operator Training Kit	**129-5626**	326.00
SIGEXPTE	Signal Express Software	**129-5628**	518.00

Oscilloscope

TDS 2000C

TDS2024

The latest version of the worlds most popular Oscilloscope. Enhanced features include:

- Brighter clearer display with wide viewing angle
- Built in waveform limit testing
- Automated, Extended Data Logging Feature
- New probes with the lowest capacitive load available and a compact head for easy probing of high density PCB's
- Tektronix Limited Lifetime warranty, for complete piece of mind.

Key Performance Specifications:
- Up to 2 GS/s Sample Rate on All Channels
- 2.5k point Record Length on All Channels
- Advanced Triggers including Pulse Width Trigger and Line-selectable
- Video Trigger

Ease-of-Use Features:
- 16 Automated Measurements, and FFT Analysis for Simplified Waveform Analysis
- Autoset and Signal Auto-ranging
- Built-in Context-sensitive Help
- Probe Check Wizard
- Multiple-language User Interface
- 5.7 in. (144 mm) Active TFT Colour Display
- USB 2.0 Host Port on the Front Panel for Quick and Easy Data Storage, Printing, and Connecting a USB Keyboard

Mftrs. List No.	Description	Order Code	Price Each 1+
TDS2001C	50 MHz, 2 Ch, 500 MS/s	**184-0961**	595.00
TDS2002C	70 MHz, 2 Ch, 1 GS/s	**184-0962**	722.00
TDS2004C	70 MHz, 4 Ch, 1 GS/s	**184-0963**	1,100.00
TDS2012C	100 MHz, 2 Ch, 2 GS/s	**184-0965**	869.00
TDS2014C	100 MHz, 4 Ch, 2 GS/s	**184-0966**	1,300.00
TDS2022C	200 MHz, 2 Ch, 2 GS/s	**184-0967**	1,240.00
TDS2024C	200 MHz, 4 Ch, 2 GS/s	**184-0968**	1,520.00
Accessories			1+
TPP0101	Passive Probe, 100MHz	**184-0969**	49.00
TPP0201	Passive Probe, 200MHz	**184-0970**	61.00
TPP0101-PK10	Passive Probes, 100MHz, Pack of 10	**184-0971**	446.00
TPP0201-PK10	Passive Probes, 200MHz, Pack of 10	**184-0972**	543.00

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TDS3000C Series Digital Phosphor Oscilloscopes

Tektronix CALIBRATION SERVICES

With USB Storage Capabilities

GREAT SELLER

INDUSTRY LEADING 3 YEAR WARRANTY

- 100 MHz, 300 MHz, and 500 MHz Bandwidth Models
- 2 or 4 Channels
- Sample Rates up to 5 GS/s Real Time on All Channels
- Advanced Triggers: Logic pattern, State, edge delay, runt pulse and slew rate
- Front-panel USB Host Port for Easy Storage and Transfer of Measurement Data
- 25 Automatic Measurements
- FFT Standard
- Multiple Language User Interface
- WaveAlert® Automatic Waveform Anomaly Detection
- TekProbe® Interface Supports Active, Differential, and Current Probes for Automatic Scaling and Units
- Lightweight Design (only 7 lb./3.2 kg) for Easy Transport
- Optional Internal Battery Operation Provides up to Three Hours Without Line Power

The TDS3000C Series Digital Phosphor Oscilloscopes (DPO) provide you with the performance you need at a price you can afford. Bandwidths range from 100 MHz to 500 MHz, with up to 5 GS/s sample rates for accurate representation of your signal.
To solve a problem, first you need to see it. The TDS3000C Series fast waveform capture rates and real-time intensity grading saves time by quickly revealing the nature of faults so advanced triggers can be applied to isolate them.

Quickly Debug and Characterize Signals with DRT Sampling Technology and sin(x)/x Interpolation

The TDS3000C Series combines unique digital real-time (DRT) sampling technology with sin(x)/x interpolation to allow you to accurately characterize a wide range of signal types on all channels simultaneously. With the TDS3000C Series there is no change in sampling rate when additional channels are turned on. This sampling technology makes it possible to capture high-frequency information, such as glitches and edge anomalies, that elude other oscilloscopes, while sin(x)/x interpolation ensures precise reconstruction of each waveform.

Application Modules for Specialized Analysis

- Advanced Analysis Module
- Limit Testing Module
- Telecommunications Mask Testing Module
- Extended Video Module
- 601 Serial Digital Video Module

Applications

- Digital Design and Debug
- Video Installation and Service
- Power Supply Design
- Education and Training
- Telecommunications Mask Testing
- Manufacturing Test
- General Bench Testing

Accessories

TDSPCS1 NI Signal Express™ Tektronix edition Software
Provides extended capabilities including advanced analysis, datalogging, remote instrument control and waveform analysis.

TDS3GV Communications Module + OpenChoice
Offers GPIB, VGA and RS-232 interfaces and supplied with OpenChoice software

P6243 1GHz Active Probe
1.3m 1 GHz Active probe for use with TDS3064, to enhance the features of the oscilloscope

Order Code	1554155	1554156	1554157	1554158	1554159	1554160
Mftrs. List No.	TDS3012C	TDS3054C	TDS3032C	TDS3034C	TDS3052C	TDS3054C
Bandwidth	100MHz	500MHz	300MHz	300	500MHz	500MHz
Channels	2	4	2	4	2	4
Sample rate per chan.	1.25GS/s	5GS/s	2.5GS/s	2.5GS/s	5GS/s	5GS/s
Time base	4ns-20s	1ns-20s	2ns-10s	2ns-20s	1ns-20s	1ns-20s
Time base accuracy	20ppm	20ppm	20ppm	20ppm	20ppm	20ppm
BW limit	20MHz	20MHz	20, 150MHz	20, 150MHz	20, 150MHz	20, 150MHz

Maximum Record Length	10K points on all models
Vertical resolution	9-bits on all models
Vertical Sensitivity/div	1mV-10V on all models
Vertical accuracy	+/-2% on all models *1
Max. Input Voltage(1MR)	150 Vrms CAT I on all models (300 V CAT II with standard 10X probe)
Position range	± 5 div on all models
Input coupling	AC, DC, GND on all models
Input Impedance select.	1 MΩ in parallel with 13 pF or 50Ω
Display monitor	Colour LCD

Three Years Manufacturers Warranty

Description	Mftrs. List No.	Order Code	Price Each 1+
Oscilloscopes			
100MHz, 2Ch	TDS3012C	**155-4155**	3,790.00
100MHz, 4Ch	TDS3014C	**155-4156**	4,640.00
300MHz, 2Ch	TDS3032C	**155-4157**	5,590.00
300MHz, 4Ch	TDS3034C	**155-4158**	6,660.00
500MHz, 2Ch	TDS3052C	**155-4159**	8,060.00
500MHz, 4Ch	TDS3054C	**155-4160**	9,550.00
Accessories			
Comms+Openchoice	TDS3GV	**369-3880**	571.00
1GHz Active Probe	P6243	**207-433**	808.00

DPO2000B / MSO2000B - Mixed Signal Oscilloscopes

Tektronix

NEW

The MSO2000B and DPO2000B Series digital phosphor oscilloscopes (DPOs) deliver the performance and tools you need to visualize your signals and find answers quickly. The DPO2000B Series are the first oscilloscopes to provide 1M points of usable record length on all channels, serial trigger and decode analysis options, FilterVu™ a variable low-pass filter that also allows you to see signal details to the oscilloscope's full bandwidth and all in a compact form factor. The MSO2000B Series adds 16 integrated digital channels, enabling you to visualize and time correlate analog and digital signals on a single instrument. This integration extends triggering functionality across all 20 channels, which is ideal for debugging mixed analog and digital designs.

Features & Benefits

- 70MHz, 100MHz, 200MHz Bandwidth Models
- 2 and 4 Analog Channel Models
- 16 Digital Channels (MSO Series)
- 1 GS/s Sample Rate on All Channels
- 1 Megapoint Record Length on All Channels
- 5,000 wfm/s Maximum Waveform Capture Rate
- Suite of Advanced Triggers
- Five-year warranty

	MSO2002B DSO2002B	MSO2004B DSO2004B	MSO2012B DSO2012B	MSO2014B DSO2014B	MSO2022B DSO2022B	MSO2024B DSO2024B
Vertical System Analog Channels						
Input Channels	2	4	2	4	2	4
Analog Bandwidth	70 MHz		100 MHz		200 MHz	
Calculated Rise Time	5 ns		3.5 ns		2.1 ns	
Hardware Bandwidth Limits			20 MHz			
Input Coupling			AC, DC, GND			
Input Impedance			1 MΩ ±2%, 11.5 pF ±2 pF			
Input Sensitivity Range			2 mV/div to 5 V/div			
Vertical Resolution			8 bits			
Horizontal System - Analog Channels						
Max. Sample Rate			1 GS/s			
Min. Peak Detect Pulse Width			5 ns			
Max. Record Length			1 M points			
Timebase Range		4 ns to 100 s			2 ns to 100 s	
Timebase Delay Time Range			-10 div to 5000 s			
Channel-to-Channel Deskew Range			±100 ns			
Timebase Accuracy			±25 ppm			
General						
Input Voltage			100 V to 240 V			
Power Consumption			80 W			
Operating Temperature			0 °C to 50 °C			
Dimensions			180 x 377 x 134 mm			
Weight			3.6 kg			

Mftrs. List No.	Description	Order Code	Price Each 1+
DPO2002B	Oscilloscope, DPO, 2CH, 70MHz	**219-1868**	830.00
DPO2004B	Oscilloscope, DPO, 4CH, 70MHz	**219-1869**	1,270.00
DPO2012B	Oscilloscope, DPO, 2CH, 100MHz	**219-1870**	1,040.00
DPO2014B	Oscilloscope, DPO, 4CH, 100MHz	**219-1871**	1,510.00
DPO2022B	Oscilloscope, DPO, 2CH, 200MHz	**219-1872**	1,470.00
DPO2024B	Oscilloscope, DPO, 4CH, 200MHz	**219-1873**	1,810.00
MSO2002B	Oscilloscope, MSO, 2CH, 70MHz	**219-1874**	1,380.00
MSO2004B	Oscilloscope, MSO, 4CH, 70MHz	**219-1875**	1,810.00
MSO2012B	Oscilloscope, MSO, 2CH, 100MHz	**219-1876**	1,580.00
MSO2014B	Oscilloscope, MSO, 4CH, 100MHz	**219-1877**	2,040.00
MSO2022B	Oscilloscope, MSO, 2CH, 200MHz	**219-1879**	2,010.00
MSO2024B	Oscilloscope, MSO, 4CH, 200MHz	**219-1881**	2,350.00
Application Modules			
DPO2AUTO	Module, Automotive Serial Trigger	**166-5104**	482.00
DPO2COMP	Module, Computer Serial Trigger	**166-5105**	225.00
DPO2EMBD	Module, Embedded Serial Trigger	**166-5107**	225.00
Probes			
THDP0100	High Voltage Probe, 100X/1000X, 100MHz	**207-2156**	2,210.00
THDP0200	High Voltage Probe, 50X/500X, 200MHz	**207-2157**	1,290.00
TMDP0200	High Voltage Probe, 25X/250X, 200MHz	**207-2158**	1,290.00
TAP1500	Voltage, Single Ended, 1.5GHz	**185-6714**	1,600.00
TDP0500	Differentail Voltage, ±42, 500MHz	**185-6715**	2,570.00
TCP0030	Current, AC/DC, 30A, 120MHz	**185-6718**	2,590.00
TCP0150	Current, AC/DC, 150A, 20MHz	**185-6719**	3,060.00
TCPA300	Current, Measurement System Amplifier, 300A	**436-0230**	1,710.00
TCPA400	Current, Measurement System Amplifier, 400A	**436-0278**	1,710.00
TCP305	AC/DC Current, 50A, 50MHz	**436-0254**	1,110.00

Continues on next page

Mftrs. List No.	Description	Order Code	Price Each 1+
Probes			
TCP404XL	AC/DC Current, 500A, 2MHz	**436-0280**	2,840.00
P5100A	Passive High Voltage, 100X, 2.5kV, 500MHz	**187-7504**	354.00
ADA400A	High Gain Differential Pre-amplifier	**207-421**	1,410.00
Accessories			
DPO2CONN	Module, Ethernet & External Monitor	**166-5106**	273.00
RMD2000	Rackmount Kit	**166-5111**	382.00
ACD2000	Sort Large Case	**166-5112**	186.00
TPA-BNC	BNC Adapter, TekVPI to TekProbe	**185-6721**	370.00
TEK-USB-488	Adapter, GPIB-to-USB	**129-5623**	577.00
HCTEK4321	Hard Transit Case	**129-5624**	595.00
FPGAVIEW-A-MSO-PC	FPGA Software (PC Locked)	**225-0910**	1,750.00
FPGAVIEW-A-MSO	FPGA Software (MSO Locked)	**225-0911**	1,750.00

Mixed Signal Oscilloscopes

MSO3000, DPO3000 Series

Tektronix

NEW

CALIBRATION SERVICES

With up to 500 MHz bandwidth and 2.5 GS/s sample rate, the MSO/DPO3000 Mixed Signal Oscilloscope Series provides the performance you need for many of today's mainstream applications. With as many as 20 channels, you can analyze analog and digital signals with a single instrument. Combine that with automated serial and parallel bus analysis, innovative Wave Inspector® controls, and automated power measurements, and the MSO/DPO3000 Series provides the feature-rich tools you need to simplify and speed debug of your complex design.

Key Performance Specifications

- 500, 300, 100 MHz Bandwidth Models
- 2 and 4 Analog Channel Models
- 16 Digital Channels (MSO Series)
- 2.5 GS/s Sample Rate on All Channels
- 5 Megapoint Record Length on All Channels
- >50,000 wfm/s Maximum Waveform Capture Rate
- Suite of Advanced Triggers

Ease of Use Features

- Wave Inspector® Controls Provide Easy Navigation and Automated Search of Waveform Data
- 29 Automated Measurements, and FFT Analysis for Simplified Waveform Analysis
- TekVPI® Probe Interface Supports Active, Differential, and Current Probes for Automatic Scaling and Units
- 9 in. (229 mm) WVGA Widescreen Color Display
- Small Footprint and Lightweight - Only 5.8 in. (147 mm) deep and 9 lb. (4 kg)

Connectivity

- USB 2.0 Host Port on both the Front Panel and Rear Panel for Quick and Easy Data Storage, Printing, and Connecting a USB Keyboard
- USB 2.0 Device Port on Rear Panel for Easy Connection to a PC or Direct Printing to a PictBridge®-compatible Printer
- Integrated 10/100 Ethernet Port for Network Connection and Video Out Port to Export the Oscilloscope Display to a Monitor or Projector

Optional Serial Triggering and Analysis

- Automated Serial Triggering, Decode, and Search Options for I2C, SPI, CAN, LIN, RS-232/422/485/UART, and I2S/LJ/RJ/TDM

Mixed Signal Design and Analysis (MSO Series)

- Automated Triggering, Decode, and Search on Parallel Buses
- Multichannel Setup and Hold Triggering
- MagniVu™ High-speed Acquisition Provides 121.2 ps Fine Timing Resolution on Digital Channels

Optional Application Support

- Power Analysis
- HDTV and Custom Video Analysis

	MSO3012 DPO3012	MSO3014 DPO3014	MSO3032 DPO3032	MSO3034 DPO3034	DPO3052	MSO3054 DPO3054
Input Channels	2 Analogue, 16 Digital	4 Analogue	2 Analogue	4 Analogue	2 Analogue	4 Analogue
Analog Bandwidth (-3 dB)	100MHz	100MHz	300MHz	300MHz	500MHz	500MHz
Rise Time 5 mV/div (typical)	3.5ns	3.5ns	1.17ns	1.17ns	700ps	700ps

Vertical System Digital Channels - All MSO3000 Models

Input Channels	16 Digital (D15 to D0)
Thresholds	Threshold per set of 8 channels
Threshold Selections	TTL, CMOS, ECL, PECL, User Defined
User-defined Threshold Range	-15 V to +25 V
Maximum Input Voltage	-20 V to +30 V

Mftrs. List No.	Bandwidth	Channels	Order Code	Price Each 1+
DPO3012	100MHz	2 Analogue	**185-6671**	2,220.00
DPO3014	100MHz	4 Analogue	**185-6672**	2,660.00
DPO3032	300MHz	2 Analogue	**185-6673**	4,200.00
DPO3034	300MHz	4 Analogue	**185-6675**	5,050.00
DPO3052	500MHz	2 Analogue	**185-6676**	5,660.00
DPO3054	500MHz	4 Analogue	**185-6677**	6,910.00
MSO3012	100MHz	2 Analogue, 16 Digital	**185-6678**	3,160.00
MSO3014	100MHz	4 Analogue, 16 Digital	**185-6679**	3,620.00
MSO3032	300MHz	2 Analogue, 16 Digital	**185-6680**	5,600.00
MSO3034	300MHz	4 Analogue, 16 Digital	**185-6681**	6,770.00
MSO3054	500MHz	4 Analogue, 16 Digital	**185-6682**	9,010.00

Mftrs. List No.	Bandwidth	Channels	Order Code	Price Each 1+
Application Modules				
DPO3AUDIO	Audio Serial Triggering and Analysis Module		**185-6683**	723.00
DPO3AUTO	Automotive Serial Triggering and Analysis Module		**185-6684**	723.00
DPO3COMP	Computer Serial Triggering and Analysis Module		**185-6685**	723.00
DPO3EMBD	Embedded Serial Triggering and Analysis Module		**185-6687**	723.00
DPO3PWR	Power Analysis Module		**185-6688**	901.00
DPO3VID	HDTV and Custom Video Triggering Module		**185-6689**	457.00
DPO3AERO	Aerospace Serial Triggering & Analysis Module		NEW **210-0026**	723.00
DPO3FLEX	Flexray Serial Triggering & Analysis Module		NEW **210-0027**	723.00
THDP0100	High Voltage Probe, 100X/1000X, 100MHz		NEW **207-2156**	2,210.00
THDP0200	High Voltage Probe, 50X/500X, 200MHz		NEW **207-2157**	1,290.00
TMDP0200	High Voltage Probe, 25X/250X, 200MHz		NEW **207-2158**	1,290.00

MSO4000B / DPO4000B - Mixed Signal Oscilloscopes

Tektronix

NEW

Offering up to 1 GHz bandwidth and 5 GS/s sample rate, the MSO/DPO4000B Mixed Signal Oscilloscope Series delivers the performance you need to see fast-changing signal details. With as many as 20 channels, you can analyze analogue and digital signals with a single instrument. Combine that with automated serial and parallel bus analysis, innovative Wave Inspector® controls, automated power measurements, and the MSO/DPO4000B Series provides the feature-rich tools you need to simplify and speed debug of your complex design.

Key Performance Specifications

- 1 GHz, 500 MHz, 350 MHz, 100 Mhz Bandwidth Models
- 4 Analog Channel Models
- 16 Digital Channels (MSO Series)
- Up to 5 GS/s Sample Rate on All Channels
- 5 Megapoint Record Length (L version only and 20 Megapoint Record Length on all other models
- >50,000 wfm/s Maximum Waveform Capture Rate
- Standard Passive Voltage Probes with Less than 4 pF Capacitive Loading and 500 MHz or 1 GHz Analog Bandwidth
- Suite of Advanced Triggers
- 3 year warranty (extended to 5 years with order code 2070369)

Ease of Use Features

- Wave Inspector® Controls provide Easy Navigation and Automated Search of Waveform Data
- 41 Automated Measurements, Waveform Histograms, and FFT Analysis for Simplified Waveform Analysis
- TekVPI® Probe Interface supports Active, Differential, and Current Probes for Automatic Scaling and Units
- 10.4 in. (264 mm) Bright XGA Color Display
- Small Footprint and Lightweight - Only 5.8 in. (147 mm) deep and 11 lb. (5 kg)

Connectivity

- Two USB 2.0 Host Ports on the Front Panel and Two on the Rear Panel for Quick and Easy Data Storage, Printing, and Connecting a USB Keyboard
- USB 2.0 Device Port on Rear Panel for Easy Connection to a PC or Direct Printing to a PictBridge®-compatible Printer
- Integrated 10/100/1000BASE-T Ethernet Port for Network Connection and Video Out Port to Export the Oscilloscope Display to a Monitor or Projector

Optional Serial Triggering and Analysis

- Automated Serial Triggering, Decode, and Search Options for I2C, SPI, USB, Ethernet, CAN, LIN, FlexRay, RS-232/422/485/UART, MIL-STD-1553, and I2S/LJ/RJ/TDM

Mixed Signal Design and Analysis (MSO Series)

- Automated Triggering, Decode, and Search on Parallel Buses
- Per-channel Threshold Settings
- Multichannel Setup and Hold Triggering
- MagniVu™ High-speed Acquisition Provides 60.6 ps Fine Timing Resolution on Digital Channels

Optional Application Support

- Power Analysis
- Limit and Mask Testing
- HDTV and Custom Video Analysis

Mftrs. List No.	Bandwidth	Analog Channels	Sample Rate 1 Ch	Sample Rate 2 Ch	Sample Rate 4 Ch	Record Length 1 Ch	Record Length 2 Ch	Record Length 4 Ch	Digital Channels
DPO4014B	100MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	–
DPO4034B	350MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	–
DPO4054B	500MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	–
DPO4102B	1GHz	2	5 GS/s	5 GS/s	–	20 M	20 M	–	–
DPO4102B-L	1GHz	2	5 GS/s	2.5 GS/s	–	5 M	5 M	–	–
DPO4104B	1GHz	4	5 GS/s	5 GS/s	5 GS/s	20 M	20 M	20 M	–
DPO4104B-L	1GHz	4	5 GS/s	5 GS/s	2.5 GS/s	5 M	5 M	5 M	–
MSO4014B	100MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	16
MSO4034B	350MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	16
MSO4054B	500MHz	4	2.5 GS/s	2.5 GS/s	2.5 GS/s	20 M	20 M	20 M	16
MSO4102B	1GHz	2	5 GS/s	5 GS/s	–	20 M	20 M	–	16
MSO4102B-L	1GHz	2	5 GS/s	2.5 GS/s	–	5 M	5 M	–	16
MSO4104B	1GHz	4	5 GS/s	5 GS/s	5 GS/s	20 M	20 M	20 M	16
MSO4104B-L	1GHz	4	5 GS/s	5 GS/s	2.5 GS/s	5 M	5 M	5 M	16

Continues on next page

Vertical System Digital Channels - All MSO4000B Models

Input Channels	16 Digital (D15 to D0)
Thresholds	Per-channel Thresholds
Threshold Selections	TTL, CMOS, ECL, PECL, User Defined
User-defined Threshold Range	±40 V
Maximum Input Voltage	±42 Vpeak

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
20M Points Record Length			
DPO4014B	100MHz	**221-1313**	4,750.00
DPO4034B	350MHz	**185-6690**	7,110.00
DPO4054B	500MHz	**185-6691**	9,300.00
DPO4102B	1GHz	**207-9664**	8,370.00
DPO4104B	1GHz	**185-6692**	11,400.00
MSO4014B	100MHz	**221-1314**	6,310.00
MSO4034B	350MHz	**185-6693**	9,040.00
MSO4054B	500MHz	**185-6694**	11,600.00
MSO4102B	1GHz	**207-9661**	10,800.00
MSO4104B	1GHz	**185-6695**	14,300.00
5M Points Record Length			
DPO4102B-L	1GHz	**207-9666**	6,640.00
MSO4102B-L	1GHz	**207-9662**	8,510.00
MSO4104B-L	1GHz	**207-9660**	10,900.00
DPO4104B-L	1GHz	**207-9663**	8,840.00
Application Modules			
DPO4AUDIO	Audio Serial Triggering and Analysis Module	**185-6696**	964.00
DPO4AUTO	Automotive Serial Triggering and Analysis Module	**185-6697**	964.00
DPO4AUTOMAX	Extended Automotive Serial Triggering and Analysis Module	**185-6699**	3,350.00
DPO4COMP	Computer Serial Triggering and Analysis Module	**185-6700**	964.00
DPO4EMBD	Embedded Serial Triggering and Analysis Module	**185-6701**	964.00
DPO4USB	USB Serial Triggering and Analysis Module	**185-6702**	1,070.00
DPO4PWR	Power Analysis Application Module	**185-6703**	1,200.00
DPO4VID	HDTV and Custom Video Triggering Module	**185-6705**	590.00
DPO4ENET	Ethernet Serial Triggering and Analysis Module	**185-6706**	1,070.00
DPO4AERO	Aerospace Serial Triggering and Analysis Module	**185-6707**	1,070.00
DPO4LMT	Limit and Mask Testing Application Module	**185-6708**	590.00
Accessories			
P6516	16 Channel Probe (MSO4000 Series)	**207-0531**	824.00
ACD4000B	Soft Transit Case	**185-6709**	195.00
HCTEK54	Hard Transit Case (Requires ACD4000B)	**185-6710**	711.00
RMD5000	Rackmount Kit	**185-6711**	630.00
SILV600	Service Plan	**207-0369**	543.00
THDP0100	High Voltage Probe, 100X/1000X, 100MHz	**207-2156**	2,210.00
THDP0200	High Voltage Probe, 50X/500X, 200MHz	**207-2157**	1,290.00
TMDP0200	High Voltage Probe, 25X/250X, 200MHz	**207-2158**	1,290.00
FPGAVIEW-A-MSO-PC	FPGA Software (PC Locked)	**225-0910**	1,750.00
FPGAVIEW-A-MSO	FPGA Software (MSO Locked)	**225-0911**	1,750.00

Handheld Oscilloscopes

NEW

Tektronix CALIBRATION SERVICES

THS3000 Series

- 100 MHz and 200 MHz models
- 4 fully Isolated and Floating Channels
- 600 VRMS CAT III rated inputs
- 10 Kpoints standard record length on all channels
- Maximum sample rates up to 5 GS/s
- Advanced triggering
- 21 automatic measurements
- FFT function standard on all models
- 7 Hours of continuous battery operation
- USB 2.0 device and host support
- Lightweight and portable
- Tektronix OpenChoice™ desktop software included
- 3 year warranty

Tektronix introduces the THS3014 and THS3024 handheld (HH) oscilloscopes. These products are targeted at field test and bench design applications. These products are an excellent solution for customers requiring true portability and battery operation. Additionally, customers working in power applications will find the technical capabilities very well suited for making floating and high-voltage measurements. This family offers superior technical performance along with a rich set of measurement and analysis features.

	THS3014	THS3024
Bandwidth	100MHz	200MHz
Channels	4 Analogue	
Max Sample Rate	2.5GSPS	5GSPS
Max Record Length	10000 points per channel (30000 roll mode) per channel	
Data Capture	Waveform record & playback, measurement TrendPlot	
Analysis	Waveform pass/fail compare, FFT, Waveform math	
Display	6" (15.2cm) Color	
Battery	7 hours Li-ion	
Interface ports	USB host and USB mini-B device	
Safety	600 VRMS CAT III	
Instrument Weight	2.2kg	
Warranty	3 years	

Mftrs. List No.	Description	Order Code	Price Each 1+
THS3014	100MHz 4 Channel Oscilloscope	**206-1362**	3,310.00
THS3024	200MHz 4 Channel Oscilloscope	**206-1364**	3,750.00
Accessories			
THP0301-Y	10X Passive Probe (Yellow)	**206-1365**	137.00
THP0301-B	10X Passive Probe (Blue)	**206-1366**	137.00
THP0301-M	10X Passive Probe (Magenta)	**206-1367**	137.00
THP0301-G	10X Passive Probe (Green)	**206-1368**	137.00
THSBAT	Li-ion Rechargeable Battery	**206-1369**	233.00
HCHHS	Hard Carry Case	**206-1370**	195.00
020-3085-00	Replacement Probes (Pk2)	**206-4107**	125.00
016-2050-00	Probe Carry Case	**206-4109**	50.00

Mixed Domain Oscilloscopes

Tektronix

NEW

MDO4000 Series

Introducing the MDO4000 series, the world's first and only oscilloscope with a built-in spectrum analyzer. For the first time ever, you can capture time-correlated analog capture time-correlated analog, digital, and RF signals for a complete system view of your device. See both the time and frequency domain in a single glance. View the RF spectrum at any point in time to see how it changes over time or with device state. Solve the most complicated design issues, quickly and efficiently, with an oscilloscope as integrated as your design.

- Standard passive voltage probes with 3.9 pF capacitive loading and 500 MHz or 1 GHz analog bandwidth
- Time-correlated analog, digital, and RF signal acquisitions in a single instrument
- Wave Inspector® controls provide easy navigation of timecorrelated data from both the time and frequency domains
- Amplitude, frequency, and phase vs. time waveforms derived from RF input
- Selectable spectrum time to discover and analyze how RF spectrum changes over time - even on a stopped acquisition
- Dedicated front-panel controls for commonly performed tasks
- Automated peak markers identify frequency and amplitude of spectrum peaks
- Manual markers enable non-peak measurements
- Trace types Include: Normal, Average, Max Hold, and Min Hold
- Detection types include: +Peak, -Peak, Average, and Sample
- Spectrogram display enables easy observation and insight into slowly changing RF phenomena
- Automated measurements include: Channel Power, Adjacent Channel Power Ratio (ACPR), and Occupied Bandwidth (OBW)
- Trigger on RF power level
- Triggered or Free Run spectral analysis
- 3 year warranty
- Winner of 10+ industry awards

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
MDO4014-3	100MHz	**221-1315**	8,110.00
MDO4034-3	350MHz	**221-1316**	11,100.00

FREE GLOBAL LEGISLATION SUPPORT

RoHS, REACH, WEEE, ErP, Batteries Directive - latest updates, free white papers and live online Q&A at **element14.com/legislation**

Portable Waveform Monitor

Tektronix

WFM2200

NEW

The WFM2200 waveform monitor is an ideal tool for field applications offering uncompromised monitoring quality with sharp CRT-like trace on a large 6.5inch LED back-lit display and a replaceable/rechargeable battery system. This portable waveform monitor provides an array of basic monitoring tools for video (SD, HD, Dual Link and optional 3G), and audio (Embedded, AES) monitoring that can be configured in Full and Quad Tile display to allow the user to see all the necessary signal information at a glance. ANC Data Inspector, Data list and closed caption decode are invaluable for troubleshooting problems within the ancillary data space. A video and audio generator aids in fault finding signals problems and an external reference waveform display can assist in ensuring correct video timing along with the Tektronix patented Timing display. A range of accessories expand the versatility of the WFM2200 for field operations.

- Portable form factor
- Rechargeable / replaceable battery system
- 4 Tile monitoring
- ANC Data Inspector, Data List, Closed caption decode
- Analog External Reference signal monitoring with waveform display
- Multi-format video and audio Generator with Color Bar, Pathological Signal Generation with AES/Embedded test tones
- 16-channel embedded AES audio monitoring
- Applications: Field Production Setup and Troubleshooting, System Check Tool in Distribution and Broadcast and Portable Engineering Tool in Manufacturing

Inputs	2
Formats	SD, HD, Dual Link, 3G (Option 3G)
Features	Quad Tile
Measurements	Timing display, Data Analysis (Option DATA)
Monitoring	Two Inputs, Gamut, Audio
Generation	Basic Video and Audio Test Signal
Input Voltage Range	10.75V to 20V dc
Dimensions	216 x 208 x 36mm
Weight	1.8kg

Mftrs. List No.	Order Code	Price Each 1+
WFM2200	**210-0679**	3,690.00

Arbitrary/Function Generator

NEW

Tektronix

GREAT SELLER

AFG2021

- 20 MHz sine wave, 10 MHz square and pulse wave provides a solution for most applications
- 250 MS/s sampling rate and 14-bit vertical resolution
- The intuitive and AFG3000-like UI shorten the learning curve and customers time to market
- 4 × 128 kS built-in and USB memory expansion for user-defined arbitrary waveforms
- Standard USB host/device, optional GPIB and LAN interfaces
- Multiple run modes and modulation modes
- Menu and online help are in 8 languages
- 2U height and half-rack width fit both benchtop and rack-mounted applications
- ArbExpress makes user-defined waveform editing and downloading extremely easy
- SignalExpress combines Tektronix bench instruments into a solution for automatic testing

Applications:
- Electronic test and design
- Sensor simulation
- Education and training
- Functional test
- System integration

Kit Contents: Arbitrary/Function Generator, User Manual, Power Cord, USB Cable, CD-ROM with Programmer Manual, Service Manual, Labview and IVI Drivers, CD-ROM with ArbExpress® Software and NIST-traceable Calibration Certificate.

	AFG2021
Bandwidth	20MHz
Channels	1
Waveform characteristics	
Sine frequency range	1µHz to 20MHz
Square frequency range	1µHz to 10MHz
Pulse frequency range	1mHz to 10MHz
Ramp frequency range	1µHz to 200kHz
Arbitary waveform length	1mHz to 10MHz
Modulation type	AM, FM, PM, Pulse, Sweep, Burst
Channel characteristics	
Output connector	BNC
Output impedance	50Ω
General	
Display	3.5" Colour TFT LCD
Dimensions (HxWxD)	104.2x241.8x419.1mm
Weight	2.87kg

Mftrs. List No.	Order Code	Price Each 1+
AFG2021	**214-3351**	1,190.00

AFG3000C Series Arbitrary Function Generators

Tektronix

NEW

Unmatched performance, versatility, intuitive operation, and affordability make the AFG3000C Series of Function, Arbitrary Waveform, and Pulse Generators the most useful instruments in the industry. Users can choose from 12 different standard waveforms and arbitrary waveforms can be generated up to 128 K in length at high sampling rates. Color TFT LCD screen on all models gives full confidence in the signal settings and lets you focus on the task at hand. With the ArbExpress™ PC software waveforms can be seamlessly imported from any Tektronix oscilloscope, or defined by standard functions, equation editor, and waveform math.

NOW UPGRADED

- 10MHz, 25MHz, 50MHz, 100MHz, or 240MHz Sine Waveforms
- 14 bits, 250 MS/s, 1 GS/s, or 2 GS/s Arbitrary Waveforms
- Amplitude up to 20 Vp-p into 50 Ù Loads
- 5.6 in. Color TFT LCD Display for Full Confidence in Settings and Waveform Shape
- Multilanguage and Intuitive Operation Saves Setup Time
- Pulse Waveform with Variable Edge Times
- AM, FM, PM, FSK, PWM
- Sweep and Burst
- Dual-channel Models Save Cost and Bench Space
- USB Connector on Front Panel for Waveform Storage on Memory Device
- USB, GPIB, and LAN
- LabVIEW and LabWindows/IVI-C Drivers
- 3 year warranty

Applications:
- Electronic Test and Design
- Sensor Simulation
- Functional Test
- Education and Training

	AFG3011C	AFG3021C AFG3022C	AFG3051C AFG3052C	AFG3101C AFG3102C	AFG3251C AFG3252C
Channels	1	1 / 2	1 / 2	1 / 2	1 / 2
Waveform Characteristics					
Waveforms	Sine, Square, Pulse, Ramp, Triangle, Sin(x)/x, Exponential Rise and Decay, Gaussian, Lorentz, Haversine, DC, Noise				
Sine Wave	1µHz to 10MHz	1µHz to 25MHz	1µHz to 50MHz	1µHz to 100MHz	1µHz to 240MHz
Square Wave	1µHz to 5MHz	1µHz to 25MHz	1µHz to 40MHz	1µHz to 50MHz	1µHz to 120MHz
Ramp Wave	1µHz to 100kHz	1µHz to 500kHz	1µHz to 800kHz	1µHz to 1MHz	1µHz to 2.4MHz
Pulse Wave	1mHz to 5MHz	1mHz to 25MHz	1mHz to 40MHz	1mHz to 50MHz	1mHz to 120MHz
Arbitrary	1mHz to 5MHz	1mHz to 12.5MHz	1mHz to 25MHz	1mHz to 50MHz	1mHz to 120MHz
Modulation	AM, FM, PM, Pulse, Sweep, Burst				
Physical Characteristics					
Display	5.6 in. Color TFT LCD				
Dimensions	156.3 x 329.6 x 168mm				
Weight	4.5kg				

Kit Contents: Arbitrary Function Generator, Quick-start user manual, power cord, USB cable, CD-ROM with specifications and performance verification manual, programmer manual, service manual, LabView and IVI drivers, CD-ROM with ArbExpress™ software, and NIST-traceable calibration certificate.

Mftrs. List No.	Description	Order Code	Price Each 1+
AFG3011C	Function Generator, 1 Channel, 10MHz	**225-0010**	2,930.00
AFG3021C	Function Generator, 1 Channel, 25MHz	**225-0011**	1,310.00
AFG3022C	Function Generator, 2 Channel, 25MHz	**225-0012**	1,940.00
AFG3051C	Function Generator, 1 Channel, 50MHz	**225-0013**	1,710.00
AFG3052C	Function Generator, 2 Channel, 50MHz	**225-0014**	2,530.00
AFG3101C	Function Generator, 1 Channel, 100MHz	**225-0015**	2,980.00
AFG3102C	Function Generator, 2 Channel, 100MHz	**225-0016**	4,220.00
AFG3251C	Function Generator, 1 Channel, 240MHz	**225-0017**	6,010.00
AFG3252C	Function Generator, 2 Channel, 240MHz	**225-0018**	8,250.00
Standard Warranty Extended to 5 Years			
SILV200	AFG3011C, AFG3021C, AFG3022C, AFG3101C, and AFG3102C	**207-0367**	228.00
SILV400	AFG3251C and AFG3252C	**207-0368**	363.00

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Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.
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Digital Multimeter

Tektronix

Tektronix DMM4040 & DMM4050

DMM4040 DMM4050

Dimensions (HxWxD) = 88x217x297mm

The Tektronix DMM4050 and DMM4040 6.5 digit bench multimeters pack many different functions and analysis into one instrument, all with exceptional precision and performance. With the unique dual display of the DMM4050/4040, you can measure two different parameters of the same signal from one test connection. To reveal signal quality issues like drift, intermittent transients, and stability, you can view the data as a real-time trend plot or a histogram with the DMM4050/4040's graphical display mode, or you can use measurement statistics to track how signal parameters are changing over time.

INDUSTRY LEADING 3 YEAR WARRANTY

Features & Benefits

- 6.5 Digit Resolution
- Basic VDC Accuracy of up to 0.0024% (1 yr.)
- 100 mV to 1000 V Voltage Range, with up to 100 nV Resolution
- 100 µA to 10 A Current Range, with up to 100 pA Resolution
- 10 Ω to 1 GΩ Ohm Range, with up to 10 µΩ Resolution
- CAT I 1000 V, CAT II 600 V

Available Functions and Features

- Volts, Ohms, and Amps Measurements
- Diode and Continuity Testing
- Frequency and Period Measurements
- Temperature and Capacitance Measurements (DMM4050)
- 2×4 Ohms 4-wire Measurement Technique
- TrendPlot™ Paperless Data Recorder Mode
- Measurement Statistics
- Histogram Mode

Connectivity

- Front and Rear 2×4 Measurement Inputs
- USB Host Port on Front Panel for Easy Storage of Measurement Data
- and Instrument Settings
- RS-232, LAN, and GPIB Ports on Rear Panel for Quick PC Connectivity
- Includes USB to RS-232 Interface Adapter Cable
- Includes National Instrument's LabVIEW SignalExpress™ TE Limited
- Edition for Connecting Your Bench

Memory

Model	Description
DMM4050/4040	10,000 measurements, internal, and up to 2 Gigabyte capacity with USB memory module (available separately) through front-panel USB port

DMM4050/4040 Includes: Meter, TL710 Test Leads, Line Cord, Spare Line Fuse, Calibration Certificate, Calibration Data Report, Warranty Statement, Safety and Installation Guide, CD-ROM with User Manual (English, French, Italian, German, Spanish, Simplified Chinese, Traditional Chinese, Korean, Russian, Japanese), RS-232 to USB Adapter Cable, National Instruments LabVIEW SignalExpress™ Tektronix Edition Limited Edition Software.

Mftrs. List No.	Description	Order Code	Price Each 1+
DMM4040	Digital Mutlimeter Precision 35PPM	**177-1902**	794.00
DMM4050	Digital Mutlimeter Precision 24PPM	**177-1903**	981.00
Accessories			1+
TL725	SMD Test Tweezers, 2 X 4 Wire Ohms	**177-1904**	72.00
TP750	Temperature Probe, 100 Ohm RTD (DMM4050 Only)	**177-1906**	365.00
196352001	Test Leads, Standard TL710	**177-1907**	31.00
TL705	Test Leads, Precision, 2X4 Wire	**177-1908**	54.00

Digital Multimeter

BEST SELLER

KEITHLEY A Tektronix Company

2000

NEW

This DMM offers exceptional measurement speed at any resolution. At 6½ digits, it delivers 50 triggered rdgs/s over the IEEE-488 bus. At 4½ digits, it can read up to 2000 rdgs/s into its internal 1024 reading buffer, making it an excellent choice for applications where throughput is critical. For benchtop or stand-alone applications, the 2000 has a front panel design that's simple to understand and easy to use. The 2000 has 13 built-in measurement functions, including DCV, ACV, DCI, ACI, 2WW, 4WW, temperature, frequency, period, dB, dBm, continuity measurement, and diode testing. A built-in RS-232 interface connects to a notebook or full-sized PC's serial port to take, store, process, and display measurements automatically.

- 13 built-in measurement functions
- 2000 readings/second at 4¼ digits
- Optional scanner cards for multipoint measurements
- IEEE-488 and RS-232 interfaces
- Fluke 8840/42 command set

Range Specification

AC Voltage	100mV, 1V, 10V, 100V, 750V
DC Voltage	100mV, 1V, 10V, 100V, 1000V
AC Current	1A, 3A
DC Current	10mA, 100mA, 1A, 3A
Resistance	100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ
Frequency	3Hz to 500kHz
Temperature	-200°C to 760°C, -200°C to 1372°C, -200°C to 400°C
Diode Test	3V, 10V
Continuity	1kΩ

CALIBRATION SERVICES

General Specification

Input Voltage	100V / 120V / 220V / 240V
Operating Temperature	0°C to 50°C
Dimensions	104 x 238 x 370mm
Weight	2.9kg

Kit Contents 2000/E: Multimeter, Instruction manual and Safety test leads.

Kit Contents 2000/E/2000-SCAN: Multimeter/Scanner Combination, Instruction manual and Safety test leads.

Mftrs. List No.	Description	Order Code	Price Each 1+
2000/E	Multimeter	**207-4725**	675.00
2000/E/2000-SCAN	Multimeter/Scanner	**213-1292**	947.00
Accessories			
1600A	High Voltage Probe	**213-1299**	135.00
1681	Clip On Test Lead Set	**213-1296**	26.00
2000-SCAN	10 Channel Scanner Card	**213-1239**	343.00
2001-SCAN	10 Channel Scanner Card with 2 High Speed Channels	**213-1240**	673.00
2001-TCSCAN	9 Channel Thermocouple Scanner Card	**213-1241**	903.00
4288-1	Single Unit Rack Mount Kit	**213-1276**	72.00
4288-2	Dual Unit Rack Mount Kit	**213-1277**	100.00
4288-4	Dual Fixed Rack Mount Kit	**213-1278**	225.00
4288-5	Single and Dual Fixed Rack Mount Kit	**213-1279**	271.00
7007-1	Shielded IEEE-488 Cable, 1m	**213-1242**	89.00
7007-2	Shielded IEEE-488 Cable, 2m	**213-1243**	98.00
7009-5	RS-232 Cable, 1.5m	**213-1244**	45.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00
KUSB-488B	IEEE-488.2 USB-to-GPIB Interface Adapter	**207-7471**	421.00

Digital Multimeter

KEITHLEY A Tektronix Company

2100

NEW

The 2100 model USB Digital Multimeter is a high performance DMMs. Its high accuracy (38ppm), 6½ digit resolution is ideal for critical measurements. The 2100 model features 11 measurement functions and 8 math functions to easily accommodate the most commonly measured parameters. With its high precision, the 2100 model is designed for R&D engineers, test engineers, scientists, and students making basic precision measurements on the bench and in system applications.

CALIBRATION SERVICES

- High precision 6½ digit DMM for critical measurements
- 11 measurement functions cover most commonly measured parameters
- Fully specified accuracies on all functions for ISO-compliant results
- TMC compliant USB 2.0 interface for use with SCPI test programs
- Included PC software utilities for graphing and data sharing in both Microsoft® Word and Excel
- Rugged construction for durability in bench/portable applications
- Selectable front/rear inputs facilitate bench or rack use

Applications:

- Test Engineers: Manual and semi-automatic electrical functional test
- Development Engineers: Electrical/electronic circuit and product validation
- Service/Calibration Technicians: Electronic product repair and calibration
- Research Scientists: Electrical and physics experiments testing
- Engineering Students: Electronic device and circuits experiment testing

Range Specification

AC Voltage	100mV, 1V to 750V
DC Voltage	100mV, 1V, 10V, 100V, 1000V
AC Current	1A, 3A
DC Current	10mA, 100mA, 1A, 3A
Resistance	100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ
Temperature	-100°C to 100°C / -200°C to 630°C
Diode Test	1V
Continuity	1000Ω

General Specification

Input Voltage	120V / 220V / 240V
Operating Temperature	5°C to 40°C
Dimensions	112 x 256 x 375mm
Weight	4.1kg

Kit Contents: Multimeter, Instruction manual on CD, Specifications, LabVIEW® driver, Keithley I/O layer, USB cable, Power cable, Safety test leads, KI-Tool and KI-Link Add-in (Both Microsoft Word and Excel versions).

Mftrs. List No.	Order Code	Price Each 1+
2100/230-240	**207-4728**	570.00

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Only scope

with a built-in spectrum analyzer.

Test & Measurement World BEST IN TEST 2012 AWARD WINNER

1 Time Domain Display
2 Frequency Domain Display

The world's first mixed domain oscilloscope is now even more accessible.

The award-winning Tektronix MDO4000 Series Mixed Domain Oscilloscope is turning heads with its revolutionary built-in spectrum analyzer. For the first time, you can capture up to 21 time-correlated analog, digital and RF signals with one instrument. You can even view the RF spectrum at different points in time to see critical changes. With new models starting at just 100MHz bandwidth / 3GHz RF, you can capture more signal types with one instrument than ever before. For less than ever before.

MDO4000 Mixed Domain Oscilloscope

- 4 analog channels
  - 100 MHz to 1 GHz bandwidth models
- 16 digital channels
- Parallel and serial bus triggering and analysis
- Built on the MSO4000B mixed signal oscilloscope platform
- 1 RF channel
  - 50 kHz – 3 GHz and 50 kHz – 6 GHz frequency range models
  - Ultra-wide capture bandwidth up to 3 GHz
- Unique RF analysis tools: automated markers, spectrogram display, RF vs. time traces, advanced RF triggers

Farnell element14

For accurate, reliable and trusted measurement expertise, go to:
http://uk.farnell.com/tektronix-mdo4000-series

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Tektronix®

Digital Multimeters

KEITHLEY A Tektronix Company

2001 and 2002

NEW

DMM users whose applications demand resolution, accuracy, and sensitivity combined with high throughput now have two alternatives. These 7½ digit and 8½ digit high performance digital multimeters not only deliver performance specifications usually associated with instruments that cost more, but they also offer a broad range of functions not typically available from DMMs. The 2002 is based on the same superior measurement technology as the 2001, and the front panels of both instruments have the same look, feel, and response.

- True 7½ (Model 2001) or 8½ digit (Model 2002) resolution
- Exceptional measurement integrity with high speed
- High speed function and range changing
- Broad range of built-in measurement functions
- Multiple measurement display
- Built-in 10 channel scanner option
- IEEE-488.2 and SCPI compatible
- HP3458A emulation mode (Model 2002)

CALIBRATION SERVICES

Range Specification

AC Voltage	200mV, 2V, 20V, 200V, 750V
DC Voltage	200mV, 2V, 20V, 200V, 1000V
AC Current	200µA, 2mA, 20mA, 200mA, 2A
DC Current	200µA, 2mA, 20mA, 200mA, 2A
Resistance	20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ, 200MΩ, 1GΩ
Frequency	1Hz to 15MHz
Temperature	J, K, N, T, E, R, S, B Thermocouple

General Specification

Input Voltage	90V to 134V / 180V to 250V
Operating Temperature	0°C to 50°C
Dimensions	90 x 214 x 369mm
Weight	4.2kg

Kit Contents: Multimeter, Modular test lead, User's manual, slot cover and full calibration data.

Mftrs. List No.	Description	Order Code	Price Each 1+
2001.	7½ Digit Resolution	**207-4726**	3,730.00
2002.	8½ Digit Resolution	**207-4727**	4,990.00
Accessories			
1600A	High Voltage Probe	**213-1299**	135.00
1681	Clip On Test Lead Set	**213-1296**	26.00
2000-SCAN	10 Channel Scanner Card	**213-1239**	343.00
2001-SCAN	10 Channel Scanner Card with 2 High Speed Channels	**213-1240**	673.00
2001-TCSCAN	9 Channel Thermocouple Scanner Card	**213-1241**	903.00
4288-1	Single Unit Rack Mount Kit	**213-1276**	72.00
4288-4	Dual Fixed Rack Mount Kit	**213-1278**	225.00
5805	Kelvin (4 Wire), Spring Loaded Probes, 0.9m	**213-1246**	179.00
5808	Kelvin probes, Single Pin	**213-1247**	87.00
5809	Kelvin Clip Lead Set	**213-1248**	131.00
8502	Trigger Link to BNC Break-Out Box	**213-1254**	662.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00
KUSB-488B	IEEE-488.2 USB-to-GPIB Interface Adapter	**207-7471**	421.00

Programmable DC Power Supplies

KEITHLEY A Tektronix Company

2200 Series

CALIBRATION SERVICES

NEW

The 2200 series programmable DC power supplies provide a wide range of voltage outputs to address the testing and characterization of components, circuits, modules, and complete devices whether you are in a research laboratory, in design and development, or in production test. The 2200 series consists of five models with output voltages from 20V to 72V that can deliver 86W, 96W, 100W, and 150W of power. In addition, these power supplies can act as constant current sources as well as constant voltage sources. The 2200 series power supplies offer an excellent combination of performance, versatility, and ease of use that allow you to obtain quality test data as quickly as possible. They perform as effectively in automated test systems as they do in manual instrument configurations.

- Five models ranging in power from 86W to 150W with voltage outputs from 20V to 72V address a wide range of power requirements
- 0.03% basic voltage output accuracy and 0.05% basic current accuracy provide quality test data
- High output and measurement resolution, 1mV and 0.1mA, for testing low power circuitsand devices
- Remote sensing to ensure the programmed voltage is appliedto the load
- Dual-line display shows both the programmed values and actual outputs for a continuous indication of the status of the power delivered to the load
- Repeatable test sequences of up to 80 output steps are easy to create with the built-in List mode
- GPIB and USB interfaces are standard for convenient automated control

Input Voltage	110V / 220V
Frequency	50/60Hz
Communications	USB / GPIB
Operating Temperature	0 to 40
Dimensions	106 x 242 x 384mm
Weight	2200-20-5, 2200-30-5, 2200-32-3, 2200-72-1: 7.3kg 2200-60-2: 7kg

Mftrs. List No.	Output Voltage (V)	Output Current (A)	Output Power (W)	Order Code
2200-20-5	20	5	100	207-4730
2200-30-5	30	5	150	207-4731
2200-32-3	32	3	96	207-4732
2200-60-2	60	2.5	150	207-4733
2200-72-1	72	1.2	86	207-4735

Mftrs. List No.	Description	Order Code	Price Each 1+
2200-20-5	Programmable Power Suppply, 20V, 5A	**207-4730**	627.00
2200-30-5	Programmable Power Suppply, 30V, 5A	**207-4731**	741.00
2200-32-3	Programmable Power Suppply, 32V, 3A	**207-4732**	627.00
2200-60-2	Programmable Power Suppply, 60V, 2.5A	**207-4733**	741.00
2200-72-1	Programmable Power Suppply, 72V, 1.2A	**207-4735**	627.00
Accessories			
7007-1	Shielded IEEE-488 Cable, 1m	**213-1242**	89.00
7007-2	Shielded IEEE-488 Cable, 2m	**213-1243**	98.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00

SourceMeter®

KEITHLEY A Tektronix Company

2400 Series

CALIBRATION SERVICES

NEW

GREAT SELLER

Keithley's SourceMeter family are source measurement unit (SMU) instruments designed specifically for test applications that demand tightly coupled sourcing and measurement. All SourceMeter models provide precision voltage and current sourcing as well as measurement capabilities. Each SourceMeter instrument is both a highly stable DC power source and a true instrument- grade 6½ digit multimeter. The power source characteristics include low noise, precision, and readback. The multimeter capabilities include high repeatability and low noise. The result is a compact, single-channel, DC parametric tester. In operation, these instruments can act as a voltage source, a current source, a voltage meter, a current meter, and an ohmmeter. Manufacturers of components and modules for the communications, semiconductor, computer, automotive, and medical industries will find the SourceMeter instruments invaluable for a wide range of characterization and production test applications.

- Five instruments in one (IV Source, IVR Measure)
- Seven models: 20 to 100W DC, 1000W pulsed, 1100V to 1µV, 10A to 10pA
- Source and sink (4-quadrant) operation
- 0.012% basic measure accuracy with 6½-digit resolution
- 2, 4, and 6 wire remote V-source and measure sensing
- 1700 readings/second at 4½ digits via GPIB
- Pass/Fail comparator for fast sorting/binning
- Available high speed sense lead contact check function
- Programmable DIO port for automation/handler/prober control (except Model 2401)
- Standard SCPI GPIB, RS-232 and Keithley Trigger Link interfaces
- Keithley LabTracer 2.0 I-V curve tracing application software (download)

Applications:

- **Devices:** Discrete semiconductor devices, Passive devices, Transient suppression devices, ICs, RFICs, MMICs, Laser diodes, laser diode modules, LEDs, photodetectors, Circuit protection devices: TVS, MOV, Fuses, Airbags, Connectors, switches, relays
- **Tests:** Leakage, Low voltage/resistances, LIV, IDDQ, I-V characterization, Isolation and trace resistance, Temperature coefficient, Forward voltage, reverse breakdown, leakage current, DC parametric test, DC power source, HIPOT, Dielectric withstanding

Contact Check Function

The Contact Check function makes it simple to verify good connections quickly and easily before an automated test sequence begins. This eliminates measurement errors and false product failures associated with contact fatigue, breakage, contamination, loose or broken connection, relay failures, etc

	2400	2401	2410 / 2410-C
Range Specification			
Voltage	200mV, 2V, 20V, 200V	200mV, 2V, 20V	200mV, 2V, 20V, 1000V
Current	1µA, 10µA, 100µA, 1mA, 10mA, 100mA, 1A		1µA, 10µA, 100µA, 1mA, 20mA, 100mA, 1A
Resistance	2Ω, 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ, 200MΩ		
General Specification			
Input Voltage	100V to 240V		
Operating Temperature	0°C to 50°C		
Dimensions	104 x 238 x 370mm		

	2420	2425 / 2425-C
Range Specification		
Voltage	200mV, 2V, 20V, 60V	200Mv, 2V, 20V, 100V
Current	10µA, 100µA, 1mA, 10mA, 100mA, 1A, 3A	
Resistance	2Ω, 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ, 200MΩ	
General Specification		
Input Voltage	100V to 240V	
Operating Temperature	0°C to 50°C	
Dimensions	104 x 238 x 370mm	

Continues on next page

	2430	2440
Range Specification		
Voltage	200Mv, 2V, 20V, 100V	200mV, 2V, 10V, 40V
Current	10µA, 100µA, 1mA, 10mA, 100mA, 1A, 3A, 10A	10µA, 100µA, 1mA, 10mA, 100mA, 1A, 5A
Resistance	2Ω, 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ, 200MΩ	
General Specification		
Input Voltage	100V to 240V	
Operating Temperature	0°C to 50°C	
Dimensions	104 x 238 x 370mm	

Kit Contents: SourceMeter®, Test leads, LabVIEW software driver (downloadable) and LabTracer software (downloadable).

Mftrs. List No.	Description	Order Code	Price Each 1+
2400.	SourceMeter, 200V, 1A, 20W	**207-4736**	3,210.00
2401	SourceMeter, 20V, 1A, 20W	**207-4737**	2,350.00
2410.	SourceMeter, 1100V, 1A, 20W	**207-4738**	4,730.00
2410-C	SourceMeter, 1100V, 1A, 20W, Contact Check	**213-1300**	5,710.00
2420.	SourceMeter, 60V, 3A, 60W	**207-4739**	4,590.00
2425	SourceMeter, 100V, 3A, 100W	**213-1301**	5,640.00
2425-C	SourceMeter, 100V, 3A, 100W, Contact Check	**213-1302**	6,710.00
2430	SourceMeter, 100V, 10A, 1000W	**213-1303**	8,200.00
2440.	SourceMeter, 40V, 5A, 50W	**207-4740**	5,380.00
Accessories			
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00
KUSB-488B	IEEE-488.2 USB-to-GPIB Interface Adapter	**207-7471**	421.00
4288-1	Single Unit Rack Mount Kit	**213-1276**	72.00
4288-2	Dual Unit Rack Mount Kit	**213-1277**	100.00
4288-4	Dual Fixed Rack Mount Kit	**213-1278**	225.00
4288-5	Single and Dual Fixed Rack Mount Kit	**213-1279**	271.00
5804	Kelvin (4 Wire) Universal 10 Piece Test Lead Set	**213-1245**	161.00
5805	Kelvin (4 Wire), Spring Loaded Probes, 0.9m	**213-1246**	179.00
5808	Kelvin probes, Single Pin	**213-1247**	87.00
5809	Kelvin Clip Lead Set	**213-1248**	131.00
8501-1	Trigger Link, DIN-to-DIN, 1m	**213-1252**	51.00
8501-2	Trigger Link, DIN-to-DIN, 2m	**213-1253**	56.00
8502	Trigger Link to BNC Break-Out Box	**213-1254**	662.00
8503	Trigger Link, DIN-to-Dual BNC, 1m	**213-1255**	70.00
8505	Male DIN to 2 Female DIN Y Adapter, 0.3m	**213-1256**	70.00
CA-18-1	Dual Banana Plug, Shielded, Coax, 1.2m	**213-1251**	26.00

2600B Series System SourceMeter SMU Instruments

KEITHLEY
A Tektronix Company

NOW UPGRADED

NEW

The Series 2600B System SourceMeter SMU Instruments are current/voltage source and measure solutions, and are built from 3rd generation SMU technology. The Series 2600B offers single and dual channel models that combine the capabilities of a Precision Power Supply, true Current Source, 6-1/2 digit DMM, Arbitrary Waveform Generator, Pulse Generator, and Electronic Load. The result is a powerful solution that significantly boosts productivity in applications ranging from bench-top I/V characterization through highly-automated production test. For bench-top use, Series 2600B instruments feature built-in, Java-based software that enables plug & play I/V testing through any browser, on any computer, from anywhere in the world. For automated system applications, the Series 2600B's Test Script Processor (TSP) runs complete test programs from inside the instrument for industry-best throughput. In larger, multi-channel applications, Keithley's TSP-Link technology works together with TSP to enable high-speed, SMU-per-pin parallel testing. Because Series 2600B SourceMeter SMU Instruments have fully isolated channels that do not require a mainframe, they can be easily re-configured and redeployed as your test applications evolve.

- Tightly-integrated, 4-quadrant voltage/current source and measure instruments offer best in class performance with 6½ digit resolution
- Family of models offer industry's widest dynamic range: 10A pulse to 0.1fA and 200V to 100nV
- Built-in, Java-based test software enables true plug & play I/V characterization and test through any browser
- TSP (Test Script Processing) technology embeds complete test programs inside the instrument for best-in-class system-level throughput
- TSP-Link expansion technology for multi-channel parallel test without a mainframe
- Software emulation for Model 2400 SourceMeter SMU Instrument
- USB 2.0, LXI-C, GPIB, RS-232, and digital I/O interfaces
- Free software drivers and development/debug tools

Applications:

- Discrete and passive components
- Simple ICs: Optos, drivers, switches, sensors, converters, regulators
- Integrated devices: small scale integrated (SSI) and large scale integrated (LSI)
- Optoelectronic devices such as light-emitting diodes (LEDs), laser diodes, high brightness LEDs (HBLEDs), vertical cavity surface-emitting lasers (VCSELs), displays
- Wafer level reliability
- Solar Cells
- Batteries

	2601B 2602B 2604B	2611B 2612B 2614B	2634B 2635B 2636B
Range Specification			
Voltage	100mV, 1V, 6V, 40V	200mV, 2V, 20V, 200V	200mV, 2V, 20V, 200V
Current	100nA, 1µA, 10µA, 100µA, 1mA, 10mA, 100mA, 1A, 3A, 10A	100nA, 1µA, 10µA, 100µA, 1mA, 10mA, 100mA, 1A, 1.5A, 10A	1nA, 10nA, 100nA, 1µA, 10µA, 100µA, 1mA, 10mA, 100mA, 1A, 1.5A, 10A

Kit Contents: SourceMeter, Operators and Programming Manuals, 2m Low Noise Triax Cable with Alligator Clips (two supplied with 2634B and 2636B, one with 2635B), Mating Screw Terminal Connectors with strain relief and covers (2601B, 2602B, 2604B, 2611B, 2612B and 2614B only), TSP-Link/Ethernet Cable (two per unit), TSP Express Software Tool (embedded), Test Script Builder Software CD, LabVIEW Driver and ACS Basic Edition Software (optional).

Mftrs. List No.	Description	Order Code	Price Each 1+
Single Channel System			
2601B	SourceMeter, 3A DC, 10A Pulse	**224-9943**	4,310.00
2611B	SourceMeter, 200V, 10A Pulse	**224-9946**	4,310.00
2635B	SourceMeter, 0.1fA, 10A Pulse	**224-9951**	6,410.00
Dual Channel System			
2602B	SourceMeter, 3A DC, 10A Pulse	**224-9944**	6,320.00
2612B	SourceMeter, 200V, 10A Pulse	**224-9948**	6,320.00
2636B	SourceMeter, 0.1fA, 10A Pulse	**224-9952**	9,840.00
Dual Channel System - Benchtop Version			
2604B	SourceMeter, 3A DC, 10A Pulse	**224-9945**	5,060.00
2614B	SourceMeter, 200V, 10A Pulse	**224-9949**	5,060.00
2634B	SourceMeter, 0.1fA, 10A Pulse	**224-9950**	7,930.00
Accessories			
2600-TLINK	Digital I/O to TLINK Adapter, 1m	**213-1269**	90.00
3706A-S	Mainframe	**213-1294**	1,720.00
7007-1	Shielded IEEE-488 Cable, 1m	**213-1242**	89.00
7007-2	Shielded IEEE-488 Cable, 2m	**213-1243**	98.00
7078-TRX-1	Triax 3 Slot Low Noise Cable (0.3m)	**207-7464**	116.00
7078-TRX-3	Triax 3 Slot Low Noise Cable (0.9m)	**207-7465**	124.00
7078-TRX-5	Triax 3 Slot Low Noise Cable (1.5m)	**207-7466**	133.00
7078-TRX-10	Triax 3 Slot Low Noise Cable (3m)	**207-7467**	144.00
7078-TRX-BNC	Triax 3 Slot Male BNC Adapter	**207-7468**	60.00
7078-TRX-GND	Triax 3 Slot Male BNC Adapter (No Guard)	**207-7469**	51.00
CA-126-1A	DB25 (male/female), Digital I/O, Shielded, 1.5m	**213-1270**	92.00
CA-180-3A	RJ45, Crossover, Twisted Pair, 3m	**213-1271**	5.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00

Arbitrary Waveform/ Function Generator

KEITHLEY
A Tektronix Company

NEW

CALIBRATION SERVICES

3390

The 3390 model is an easy-to-use programmable signal generator with advanced function, pulse, and arbitrary waveform capabilities. Superior signal integrity, faster rise and fall times, lower noise, and greater waveform memory combine to provide high quality output signals. High resolution waveforms are supported by four times the waveform memory of any competitive waveform generator on the market. From its fully featured arbitrary waveform generator (ARB) to its high speed and ease-of-use, the 3390 model is a complete signal generation solution for all your waveform application needs up to 50MHz.

- 50MHz sine wave frequency
- 25MHz pulse frequency
- Arbitrary waveform generator with 256k-point, 14-bit resolution
- Built-in function generator capability includes: sine, square, triangle, noise, DC, etc.
- Precision pulses and square waves with fast (5ns) rise/fall times
- Built-in 10MHz external time base for multiple unit synchronization
- Built-in AM, FM, PM, FSK, PWM modulation
- Frequency sweep and burst capability
- Waveform creation software, KiWAVE, included
- LXI Class C compliance

Waveform Characteristics	
Sine frequency range	1µHz to 50MHz
Square Frequency range	1µHz to 25MHz
Ramp, Triangle Frequency range	1µHz to 200kHz
Pulse Frequency range	500µHz to 10MHz
Noise Bandwidth	20MHz
Arbitrary	1µHz to 10MHz
Modulation Type	AM, FM, PM, FSK, PWM, Sweep and Burst
General	
Power supply	110V to 240V ac
Power consumption	50VA max.
Operating temperature	0°C to 50°C
Storage temperature	-30 to 70
Interface	USB, LAN, LXI-C, GPIB
Language	SCPI-1993, IEEE-488.2
Dimensions (W x H x D)	107 x 224 x 380mm
Weight	4.08kg

Continues on next page

Kit Contents: Arbitrary waveform generator with power cord, One universal serial bus cable, One pattern generator cable, One Ethernet crossover cable and CD-ROM containing user's manual.

Mftrs. List No.	Description	Order Code	Price Each 1+
3390	Arbitrary Waveform/Function Generator	**207-4753**	1,170.00
Accessories			
7007-1	Shielded IEEE-488 Cable, 1m	**213-1242**	89.00
7007-2	Shielded IEEE-488 Cable, 2m	**213-1243**	98.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00
KUSB-488B	IEEE-488.2 USB-to-GPIB Interface Adapter	**207-7471**	421.00

Electrometer/High Resistance Meter

KEITHLEY A Tektronix Company

NEW

CALIBRATION SERVICES

6517B

This 5½ digit 6517B/E model electrometer/high resistance meter offers accuracy and sensitivity specifications. It also offers a variety of features that simplifies measuring high resistances and the resistivity of insulating materials. With reading rates of up to 425 readings/ second, the 6517B/E model is a quick, easy way to measure low-level currents. Its internal battery-backed memory buffer can now store up to 50,000 readings, allowing users to log test results for longer periods and to store more data associated with those readings. This model also provides reading rates to the internal buffer (up to 425 readings/second) and to external memory via the IEEE bus (up to 400 readings/second). Several connector modifications have been incorporated to address modern connectivity and safety requirements.

- Measures resistances up to 1016Ω
- 1fA - 20mA current measurement range
- <20µV burden voltage on lowest current ranges
- 200TΩ input impedance
- <3fA bias current
- Up to 425 rdgs/s
- 0.75fA p-p noise
- Built-in ±1kV voltage source
- Unique voltage reversal method for high resistance measurements

Specification

Voltage	2V, 20V, 200V
Current	20pA, 200pA, 2nA, 20nA, 200nA, 2µA, 20µA, 200µA, 2mA, 20mA
Resistance	2MΩ, 20MΩ, 200MΩ, 2GΩ, 20GΩ, 200GΩ, 2TΩ, 20TΩ, 200TΩ
Voltage Source	100V, 1000V
Coulomb	2nC, 20nC, 200nC, 2µC
Temperature	-25°C to 150°C
Humidity	0 to 100%

General Specification

Input Voltage	100V, 120V, 220V, 240V ac
Operating Temperature	0°C to 50°C
Dimensions	90 x 214 x 369mm
Weight	5.4kg

Kit Contents: Electrometer/high resistance meter, Low noise triax cable, High voltage dual test leads, Thermocouple bead probe and Interlock connector.

Mftrs. List No.	Accessories	Order Code	Price Each 1+
6517B/E	Electrometer / High Resistance Meter	**207-4765**	7,310.00
Accessories			
4288-4	Dual Fixed Rack Mount Kit	**213-1278**	225.00
4288-5	Single and Dual Fixed Rack Mount Kit	**213-1279**	271.00
7007-1	Shielded IEEE-488 Cable, 1m	**213-1242**	89.00
7007-2	Shielded IEEE-488 Cable, 2m	**213-1243**	98.00
7009-5	RS-232 Cable, 1.5m	**213-1244**	45.00
7078-TRX-1	Triax 3 Slot Low Noise Cable (0.3m)	**207-7464**	116.00
7078-TRX-3	Triax 3 Slot Low Noise Cable (0.9m)	**207-7465**	124.00
7078-TRX-5	Triax 3 Slot Low Noise Cable (1.5m)	**207-7466**	133.00
7078-TRX-10	Triax 3 Slot Low Noise Cable (3m)	**207-7467**	144.00
7078-TRX-BNC	Triax 3 Slot Male BNC Adapter	**207-7468**	60.00
7078-TRX-GND	Triax 3 Slot Male BNC Adapter (No Guard)	**207-7469**	51.00
8501-1	Trigger Link, DIN-to-DIN, 1m	**213-1252**	51.00
8501-2	Trigger Link, DIN-to-DIN, 2m	**213-1253**	56.00
8503	Trigger Link, DIN-to-Dual BNC, 1m	**213-1255**	70.00
KPCI-488LPA	IEEE-488.2 Interface/Controller for the PCI Bus	**207-7470**	361.00
KUSB-488B	IEEE-488.2 USB-to-GPIB Interface Adapter	**207-7471**	421.00

Portable Oscilloscopes

Agilent Technologies

1000A/B series

DSO1002A

DSO1024A

Agilent's 1000 Series oscilloscopes deliver the performance and features you expect in a big scope - and the portability and low price you require in a small one. We've redefi ned the economy scope by giving you more: more signal viewing, more capabilities and more productivity. Whether your job is designing products in R&D, teaching the next generation in education, or testing in manufacturing or service, the new 1000 Series oscilloscopes can help get it done with confidence.

- 5.7" color LCD displays waveforms noticeably brighter and crisper
- Wider viewing angle
- Mask Test Facility
- 25% more waveform viewing area with menus off
- Up to 20k memory
- 23 automatic measurements
- Sequence mode for waveform recording, playback and storage
- Selectable band-pass filtering
- Advanced triggering
- Multi Language Interfaces include: English, Japanese, simplifed Chinese, traditional Chinese, Korean, German, French, Spanish, Russian, Portuguese and Italian

CALIBRATION SERVICES

2-channel model		**4-channel model**	
DSO1052B	50 MHz		
DSO1002A	60 MHz	DSO1004A	60 MHz
DSO1072B	70 MHz		
DSO1012A	100 MHz	DSO1014A	100 MHz
DSO1102B	100 MHz		
DSO1152B	150 MHz		
DSO1022A	200 MHz	DSO1024A	200 MHz

Real-time sample rate	2 GSa/sec half channel interleaved, 1 GSa/sec all channels (A models) 1 GSa/sec half channel interleaved, 500 MSa/sec all channela (B models)
Memory depth	20 kpts half channel[3], 10 kpts each channel (A model only) 16 kpts half channel[3], 8 kpts each channel (B model only)
Vertical resolution	8 bits
Vertical range	2 mV/div to 10 V/div
Maximum input voltage	CAT I 300 Vrms, 400 Vpk; transient overvoltage 1.6kVpk (A model only)
Time-base range:	DSO102xA: 1 nsec/div to 50 sec/div DSO101xA: 2 nsec/div to 50 sec/div DSO100xA: 5 nsec/div to 50 sec/div
Selectable BW limit	20 MHz
Input coupling	DC, AC and ground
Input impedance	1 MΩ ±1% in parallel with 18 pF ± 3 pF (A model only) 1 MΩ ±2% in parallel with 15 pF ± 3 pF (B model only)
Physical size (WxHxD)	324.6 x 157.8 x 129.2mm (A model only) 303 x 154 x 133mm (B model only)
Weight	3.03 kg (A model), 2.4 kg (B model)
Ambient temperature	Operating 0°C to +40°C; non-operating -20°C to +60°C

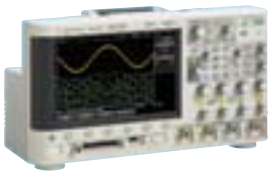
Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
2 Channel			
DSO1052B	50MHz	NEW **209-4428**	509.00
DSO1002A	60MHz	**170-4738**	696.00
DSO1072B	70MHz	NEW **209-4429**	638.00
DSO1012A	100MHz	**170-4740**	838.00
DSO1102B	100MHz	NEW **209-4430**	767.00
DSO1152B	150MHz	NEW **209-4431**	1,025.00
DSO1022A	200MHz	**170-4742**	1,193.00
4 Channel			
DSO1004A	60MHz	**170-4739**	1,057.00
DSO1014A	100MHz	**170-4741**	1,257.00
DSO1024A	200MHz	**170-4743**	1,470.00

Oscilloscope + FREE WaveGen and Voltmeter

Agilent Technologies

NEW

InfiniiVision 2000 X-Series



- 8.5-inch high resolution wide screen display
- Built-in function generator
- Built-in USB port
- Navigation front panel controls make it easy to play, stop, rewind and fast forward through waveforms
- Quickly pan and zoom for analysis with MegaZoom IV's instant response and optimum resolution
- Autoscale lets you quickly display any analog or digital active signals, automatically setting the vertical, horizontal and trigger controls for the best display, while optimizing memory
- Dedicated keys for quick access to digital channels, math functions and reference waveforms

Bandwidth limits	20 MHz selectable
Input coupling	AC, DC, GND
Input impedance	1 MΩ ± 2%
Vertical sensitivity	2 mV/div to 5 V/div
Sample rate on each channel	1 GSa/s per channel, 2 GSa/s interleaved
Memory depth (record length)	100 kpts
Display	8.5-inch WVGA with 64 levels of intensity grading

CALIBRATION SERVICES

SPECIAL OFFER* *While Stock Lasts

Continues on next page

Waveform update rate (max)	500000 waveforms/s
Vertical resolution	8 bits
DC gain accuracy	±3% (≥ 10 mV/div); ±4% (< 10 mV/div)
Dimensions	380.6 x 204.4 x 141.5 mm
Weight	3.85 kg

Mftrs. List No.	Analog Channels	Bandwidth	Order Code	Price Each 1+
DSOX2024A+DSO2WAVEGEN+DSOXDVM	4 Analogue	200MHz	**208-4581**	1,839.00
DSOX2022A+DSO2WAVEGEN+DSOXDVM	2 Analogue	200MHz	**208-4583**	1,494.00
DSOX2014A+DSO2WAVEGEN+DSOXDVM	4 Analogue	100MHz	**208-4584**	1,527.00
DSOX2012A+DSO2WAVEGEN+DSOXDVM	2 Analogue	100MHz	**208-4585**	1,061.00
DSOX2004A+DSO2WAVEGEN+DSOXDVM	4 Analogue	70MHz	**208-4586**	1,292.00
DSOX2002A+DSO2WAVEGEN+DSOXDVM	2 Analogue	70MHz	**208-4587**	848.00
MSOX2024A+DSO2WAVEGEN+DSOXDVM	4 Analogue	200MHz	**208-4575**	2,333.00
MSOX2022A+DSO2WAVEGEN+DSOXDVM	2 Analogue	200MHz	**208-4576**	1,988.00
MSOX2014A+DSO2WAVEGEN+DSOXDVM	4 Analogue	100MHz	**208-4577**	2,020.00
MSOX2012A+DSO2WAVEGEN+DSOXDVM	2 Analogue	100MHz	**208-4578**	1,554.00
MSOX2004A+DSO2WAVEGEN+DSOXDVM	4 Analogue	70MHz	**208-4579**	1,782.00
MSOX2002A+DSO2WAVEGEN+DSOXDVM	2 Analogue	70MHz	**208-4580**	1,341.00

Oscilloscope + FREE WaveGen and Voltmeter

Agilent Technologies

NEW

InfiniiVision 3000 X-Series

- 8.5-inch high resolution wide screen display
- Built-in function generator
- Built-in USB port
- Search and Navigate front panel controls make it easy to find and view specific signal activity quickly play, stop, rewind and fast forward through waveforms
- Quickly pan and zoom for analysis with MegaZoom IV's instant response and optimum resolution
- Autoscale lets you quickly display any analog or digital active signals, automatically setting the vertical, horizontal and trigger controls for the best display, while optimizing memory
- Dedicated keys for quick access to serial, digital channels, math functions and reference waveforms

CALIBRATION SERVICES

SPECIAL OFFER* *While Stock Lasts

Hardware bandwidth limits	20 MHz selectable
Input coupling	AC, DC, GND
Input impedance	Selectable: 1 MΩ ± 1%; 50 Ω ± 1.5%
Input sensitivity range	2 mV/div to 5 V/div
Sample rate on each channel	2 GSa/s per channel, 4 GSa/s interleaved
Memory depth (record length)	Up to 4 Mpts
Display	8.5-inch WVGA with 64 levels of intensity grading
Waveform update rate (max)	1000000 waveforms/s
Vertical resolution	8 bits
DC gain accuracy	±2% full scale
Dimensions	380.6 x 204.4 x 141.5 mm
Weight	3.85 kg

Mftrs. List No.	Analog Channels	Bandwidth	Order Code	Price Each 1+
DSOX3054A+DSO3WAVEGEN+DSOXDVM	4 Analogue	500MHz	**208-4566**	7,198.00
DSOX3052A+DSO3WAVEGEN+DSOXDVM	2 Analogue	500MHz	**208-4567**	5,625.00
DSOX3034A+DSO3WAVEGEN+DSOXDVM	4 Analogue	350MHz	**208-4568**	5,292.00
DSOX3032A+DSO3WAVEGEN+DSOXDVM	2 Analogue	350MHz	**208-4571**	4,399.00
DSOX3024A+DSO3WAVEGEN+DSOXDVM	4 Analogue	200MHz	**208-4572**	2,855.00
DSOX3014A+DSO3WAVEGEN+DSOXDVM	4 Analogue	100MHz	**208-4573**	2,377.00
DSOX3012A+DSO3WAVEGEN+DSOXDVM	2 Analogue	100MHz	**208-4574**	1,976.00
16 Integrated Digital Channels				
MSOX3054A+DSO3WAVEGEN+DSOXDVM	4 Analogue, 16 Digital	500MHz	**208-4559**	8,009.00
MSOX3052A+DSO3WAVEGEN+DSOXDVM	2 Analogue, 16 Digital	500MHz	**208-4560**	6,436.00
MSOX3034A+DSO3WAVEGEN+DSOXDVM	4 Analogue, 16 Digital	350MHz	**208-4561**	6,103.00
MSOX3032A+DSO3WAVEGEN+DSOXDVM	2 Analogue, 16 Digital	350MHz	**208-4562**	5,210.00
MSOX3024A+DSO3WAVEGEN+DSOXDVM	4 Analogue, 16 Digital	200MHz	**208-4563**	3,666.00
MSOX3014A+DSO3WAVEGEN+DSOXDVM	4 Analogue, 16 Digital	100MHz	**208-4564**	3,188.00
MSOX3012A+DSO3WAVEGEN+DSOXDVM	2 Analogue, 16 Digital	100MHz	**208-4565**	2,787.00

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Handheld Digital Oscilloscopes

Agilent Technologies

NEW

U1600B Series

W=138, H=241, D=66mm. Weight 1.5kg

- Large 4.5" 320x240 pixel colour LCD display
- Full remote control and data transfer via PC Link application software
- USB 1.1 full speed interface connectivity
- Multi-language Quick Help support
- 125 kilobytes/channel of waveform memory depth
- Up to 10 waveforms and configuration setups can be stored and recalled at anytime
- For extra storage, versions with USB flash drive support are available
- Real-time data logging functionality

Oscilllscope features:
- Available in 20MHz and 40MHz bandwidth versions
- Autoscaling
- Dual Waveform Math (DWM) and Fast Fourier Transform (FFT)
- 22 automatic measurements and cursor measurements

Multimeter features:
- 6000 count auto-ranging TRMS Digital Multimeter
- Voltage, Resistance and Capacitance measurements
- Diode and Continuity tests

A three-in-one solution: Dual channel oscilloscope, True RMS DMM and Real-Time Data Logger. A high performance troubleshooting and quality assurance tool for technical professionals in the installation, maintenance, service and automotive industries.

Oscilloscope Specifications

	U1602B	U1604B
Bandwidth	20MHz	40MHz
Max. Sample Rate	200 MSamples/sec (interleaved)	
Rise Time	17.5ns	8.8ns
Memory Depth	125 kB / channel	
Vertical System		
Vertical Range	5mV/div to 100V/div	
Vertical Resolution	8 bits	8 bits
DC Vertical Gain Accuracy	3%	3%
Horizontal System		
Horizontal Range	50ns/div to 50s/div	10ns/div to 50s/div
Horizontal Resolution	2ns	400ps
Horizontal Accuracy	3%	3%
Triggering		
Trigger Source	Channel 1 and Channel 2	
Trigger Modes	Auto, Normal, Single, Roll	
Selections	Edge, Pattern, Pulse Width, Video	
Automatic Measurements		
Voltage	pk-to-pk, max, min, amplitude, top, base, overshoot, preshoot, RMS and mean	
Time	frequency, period, width, duty cycle, rise time, fall time, delay and phase shift	
Waveform Maths	CH1+CH2, CH1-CH2, CH2-CH1	
FFT (U1604A only)	Rectangular, Hanning, Hamming and Blackman-Harris windows	

Multimeter Specifications

	Ranges	Best Accuracy
AC Voltage	600mV to 600V	±(0.75% rdg + 0.2% range)
DC Voltage	600mV to 600V	±(0.3% rdg + 0.08% range)
Resistance	600Ω to 600MΩ	±(0.5% rdg + 0.2% range)
Capacitance	60nF to 300µF	±(2% rdg + 0.2% range)

Accessories included: Probe (1:1) CAT III 300 V, Probe (10:1) CAT III 600 V, Ground alligator clip, DMM test lead, Hook Clip, Medium jaw alligator clip, USB cable, Power lead and AC adapter, Ni-MH battery pack, Quick Start Guide, CD-ROM containing Users Guide, Quick Start Guide and PC Link Application Software.

Description	Mfrs. List No.	Order Code	Price Each 1+
20MHz Scope	U1602B	**178-0320**	1,048.00
20MHz Scope with USB	U1602B-001	**178-0321**	1,164.00
40MHz Scope	U1604B	**178-0322**	1,308.00
40MHz Scope with USB	U1604B-001	**178-0324**	1,424.00

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uk.farnell.com/interactive-catalogue

LET'S TALK ABOUT DOING BUSINESS BETTER TOGETHER.

"The engineering world doesn't work 9-5 we need support on tricky design questions as and when they arise"

BECAUSE EVEN THE BEST CAN GET BETTER.

- Over 500,000 products in stock available for same day despatch.
- Over 3,500 industry leading suppliers
- Direct access to our engineering experts via 24/5 Live Chat, email or phone.
- Engineering community links you to industry experts along with thousands of technical documents, videos and tools.

Farnell element14

www.farnell.com

Handheld Digital Oscilloscopes

NEW

Agilent Technologies

U1610A/U1620A Series

These handheld oscilloscopes takes troubleshooting and maintenance task to a whole new level by making waveforms viewable under all lighting conditions. Whether you're working in a poor light environment, or under the glaring sun, the revolutionary VGA TFT LCD display ensures that you can analyze waveforms effortlessly by selecting among 3 viewing modes (indoor, outdoor and night vision mode). Coupled with deep memory depth of 2 Mpts, they enables you to capture long, non-repeating signals with excellent zooming capabilities onto selective glitches. Further complementing your viewing experience is the 5.7 inch screen that allows signal overviews to be analyzed in more precision compared to other conventional scopes.

- 5.7-inch VGA TFT LCD display with 3 selectable viewing modes (indoor, outdoor and night vision)
- 2 Mpts memory depth and 2 GSa/s sampling rate allows detailed analysis of captured glitches
- 100/200 MHz bandwidth with isolated channels
- 10000 count resolution on display
- Channel-to-channel isolation with CAT III 600 V safety ratings
- Data logging capability and USB connectivity

	U1610A	U1620A
Function	Scope, DMM, Data Logger	
Display	5.7" VGA TFT LCD Colour	
Channels	2 Analogue	
Bandwidth	100MHz	200MHz
Sampling Rate	1GSa/s, 500MSa/s each channel	2GSa/s, 1GSa/s each channel
Recording Length	120Kpts, 60Kpts each channel	2Mpts, 1Mpts each channel
Coupling	DC, AC, HF-Reject & LF-Reject	
Rise Time	3.5ns	1.75ns
Input Impedance	1Mohm	
Triggering	Edge, Glitch, TV, Nth Edge, CAN, LIN	
Trigger Modes	Normal, Single, Auto	
Display Count	10000	
AC/DC Voltage, True RMS	CAT II 1000V, CAT III 600V	
Resistance	100MΩ max.	
Capacitance	10mF max.	
Connectivity	USB 2.0 Full Speed	
Battery	10.8V Li-Ion	
Operating Time	Up to 3 hours	

Kit Contents: Oscilloscope, quick start guide, power adapter, battery pack, USB cable, test lead and 10:1 probe (2 sets).

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
U1610A	100MHz	**207-0920**	2,491.00
U1620A	200MHz	**207-0919**	2,818.00

Waveform Generators

Agilent Technologies

Trueform

33500B Series

Agilent 33500B Series waveform generators, with exclusive Trueform* signal generation technology, offer more capability, fidelity and flexibility than traditional DDS waveform generators. Use them to accelerate your development process from start to finish.

Agilent's Trueform technology offers a new alternative that blends the best of DDS and point-by-point architectures, by giving you the benefi ts of both without the limitations of either. Trueform technology uses an exclusive digital sampling technique that delivers unmatched performance you are accustomed to with DDS.

NEW

- Point-by-point arbitrary waveforms with sequencing
- 16 bit resolution with 1mV to 10V ranges
- Waveform summing and combining capability
- Sine waves with 5x lower harmonic distortion
- Higher bandwidth pulses with 10x less jitter
- 8.4ns rise and fall times (more than 2x faster than you'll find elsewhere)

*Trueform technology: Revolutionary signal generation with unmatched capabilities and fidelity

	33509B 33511B	33510B 33512B	33519B 33521B	33520B 33522B
Bandwidth	20MHz	20MHz	30MHz	30MHz
Channels	1	2	1	2
Waveform characteristics				
Sine frequency range	1µHz to 20MHz		1µHz to 30MHz	
Square frequency range	1µHz to 20MHz		1µHz to 30MHz	
Pulse frequency range	1µHz to 20MHz		1µHz to 30MHz	
Triangle/Ramp frequency range	1µHz to 200kHz			
Arbitary waveform length	8Sa to 1MSa per channel			
Modulation type	AM, FM, PM, FSK, BPSK, PWM, Sum, Burst, Sweep			
Channel characteristics				
Output connector	BNC			
Output impedance	50Ω			
General				
Display	4.3" Color TFT with LED backlight			
Dimensions (HxWxD)	212.8x88.3x272.3mm			
Weight	3.3kg			

Mftrs. List No.	Bandwidth	No. of Channels	Order Code	Price Each 1+
Waveform Generator				
33509B	20MHz	1	**214-2999**	1,064.00
33510B	20MHz	2	**214-3000**	1,628.00
33519B	30MHz	1	**214-3003**	1,193.00
33520B	30MHz	2	**214-3004**	1,821.00
Waveform Generator with Arbitrary				
33511B	20MHz	1	**214-3001**	1,257.00
33512B	20MHz	2	**214-3002**	1,902.00
33521B	30MHz	1	**214-3005**	1,257.00
33522B	30MHz	2	**214-3006**	1,902.00

E3600 Series Power Supplies

Agilent Technologies

For any purchase of a E3600 model, Get a U1272A Digital Multimeter free of charge

NEW

SPECIAL OFFER*

*While Stock Lasts

E3610A, E3611A, and E3612A

- Designed for general laboratory use
- The constant-voltage, constant-current output automatically operates as either a voltage or current source depending on the load
- Either the +ve or -ve terminal can be connected to ground, providing a +ve or -ve voltage output
- Outputs can also be floated up to 240V from ground
- Adjustable current limits, letting you set the safest current limit without having to short the output.
- 2 ranges, allowing more current at a lower voltage
- For higher output voltages, supplies can be connected in series

E3614A, E3615A and E3616A

- Can be used as either voltage or current sources
- Adjustable overvoltage protection circuit that disables the output when output terminal voltage increases to a preset shut-down level
- Remote sensing capability automatically compensates for voltage drop in load leads
- Multiple units can be combined in auto-parallel, auto-series and autotracking configurations for greater output voltage or current capacity
- Front and rear output terminals allow flexible configuration
- Output voltage and current can be controlled with external 0-10V analogue voltage or variable resistance
- Either the +ve or -ve terminal can be connected to ground, providing a +ve or -ve voltage output
- Outputs can also be floated up to 240V from ground
- Adjustable current limits, letting you set the safest current limit without having to short the output.

E3620A dual-output power supply

- Overload and short-circuit protection
- Smooth turn-on and turn-off transitions keep power spikes out of your circuits
- Independent and isolated outputs

E3630A triple-output power supply

- Overload and short-circuit protection
- Smooth turn-on and turn-off transitions keep power spikes out of your circuits
- Autotracking feature lets you use one voltage control to adjust the +20 V and -20 V outputs simultaneously. The outputs track each other to within 1 percent, making it easy to adjust the power supply for circuits requiring balanced voltages

E363xA Power Supply

- Address benchtop and ATE applications with up to three isolated, single or dual-range outputs in a small package
- Utilize GPIB and RS-232 interfaces with SCPI command set (drivers available)
- Enhance signal integrity in test systems via low-noise outputs
- Simplify cabling with built-in measurements
- Streamline tasks with front panel control and basic programmable features
- Ensure DUT safety with overvoltage and overcurrent protection

E364xA Power Supply

- Single and Dual Output
- Dual Output Ranges
- 30W to 100W Output Power
- Front and Rear Output Terminals
- Over-voltage Protection
- Remote Sense
- 5 complete power supply setups can be stored and recalled from internal memory
- GPIB and RS-232 Standard
- Drivers are available for Agilent VEE and National Instruments LabView and LabWindows

For further technical information, please refer to the technical datasheet on www.farnell.com

Continues on next page

Mftrs. List No.	Order Code	Price Each 1+
E3610A+U1272A	**225-0753**	304.00
E3611A+U1272A	**225-0754**	304.00
E3612A+U1272A	**225-0756**	304.00
E3614A+U1272A	**225-0757**	476.00
E3615A+U1272A	**225-0758**	476.00
E3616A+U1272A	**225-0759**	476.00
E3617A+U1272A	**225-0760**	476.00
E3620A+U1272A	**225-0761**	414.00
E3630A+U1272A	**225-0762**	414.00
E3631A+U1272A	**225-0763**	872.00
E3632A+U1272A	**225-0764**	763.00
E3633A+U1272A	**225-0765**	922.00
E3634A+U1272A	**225-0766**	922.00
E3640A+U1272A	**225-0768**	498.00
E3641A+U1272A	**225-0769**	498.00
E3642A+U1272A	**225-0770**	531.00
E3643A+U1272A	**225-0771**	531.00
E3644A+U1272A	**225-0772**	649.00
E3645A+U1272A	**225-0773**	649.00
E3646A+U1272A	**225-0774**	690.00
E3647A+U1272A	**225-0775**	690.00
E3648A+U1272A	**225-0776**	833.00
E3649A+U1272A	**225-0777**	833.00

Benchtop Digital Multimeter

Agilent Technologies

SPECIAL OFFER* *While Stock Lasts

CALIBRATION SERVICES

34401A

Gives you the performance you need for fast, accurate bench and system testing. The 34401A provides a combination of resolution, accuracy and speed that rivals DMMs costing many times more.

W=254, H=104, D=374mm. Weight 3.6kg

- Measure up to 1000V with 6½ digits resolution
- 0.0015% basic dcV accuracy (24hr)
- 0.06% basic acV accuracy (1yr)
- 3Hz to 300kHz ac bandwidth
- 1000 readings/sec. direct to GPIB
- Continuity and Diode Test functions
- Null feature allows you to remove lead resistance and other fixed offsets in your measurements
- Min / Max / Avg readouts
- Direct dB and dBm measurements
- Data Hold capability
- Store up to 512 readings in internal memory
- GPIB and RS-232 interfaces as standard features
- Voltmeter Complete and External Trigger signals are provided so you can synchronize to other instruments
- TTL output indicates Pass/Fail
- Includes three command languages (SCPI, Agilent 3478A and Fluke 8840A /42A)
- Included Agilent IntuiLink PC software allows you to put your captured data to work easily
- Programmers can use ActiveX components to control the DMM using SCPI commands
- **Promotion:** Receive a free test lead set 34133A from Agilent - Just register your purchase on **www.agilent.com/find/dmmoffer** - Available while stock lasts

Accessories Included:
Test lead kit with probe, alligator and grabber attachments. Operating Manual, Service Manual, Test Report and power lead.

	Ranges	Best Accuracy
AC Voltage	100mV to 750V	± (0.04% rdg + 0.02% range)
DC Voltage	100mV to 1kV	± 0.001% + 0.0004% of Range
AC Current	1A, 3A	± (0.1% rdg + 0.04% range)
DC Current	10mA, 100mA, 1A, 3A	± (0.1% rdg + 0.04% range)
Resistance	100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ	± (0.002% rdg + 0.0005% range)
Frequency	3Hz to 300kHz	± 0.006%

Description	Mfrs. List No.	Order Code	Price Each 1+
DMM	34401A	**133-5866**	723.00

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Performance Bench and Systems Multimeters

Agilent Technologies

CALIBRATION SERVICES

34410A and 34411A

W=261, H=104, D=303mm. Weight 3.72kg

SPECIAL OFFER* *While Stock Lasts

34410A:
- 6½ Digit high-performance multimeters
- 10,000 readings/sec @ 5½ digits direct to PC
- 1,000 readings/sec @ 6½digits direct to PC
- 30 PPM 1 year Basic DC accuracy
- LAN, USB & GPIB standard
- DCV, ACV, DCI, ACI, 2-wire and 4-wire resistance, frequency, period, continuity, and diode test
- Capacitance & temperature measurements
- Data logger with 50 K reading non-volatile memory
- Expanded measurement ranges

34411A Additional Features:
- 50,000 readings/sec @ 4½ digits direct to PC
- 1 Million reading memory
- Analog level triggering
- Programmable Pre/Post triggering
- **Promotion:** Receive a free test lead set 34133A from Agilent - Just register your purchase on **www.agilent.com/find/dmmoffer** - Available while stock lasts

Both models supplied with: Test lead kit with probes and SMT attachments, test report, power cord, USB interface cable, product reference CD-ROM with soft documentation and software

	Ranges	Best Accuracy
AC Voltage	100mV to 750V	± (0.06% of rdg + 0.03% of range)
DC Voltage	100mV to 1kV	± 0.003% + 0.0005% of Range
AC Current	100μA to 3A	± (0.1% of rdg + 0.04% of range)
DC Current	100μA to 3A	± (0.1% of rdg + 0.04% of range)
Resistance	100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ, 1GΩ	± (0.01% of rdg + 0.001% of range)
Capacitance	1nF, 10nF, 100nF, 1μF, 10μF	± (0.4% of rdg + 0.1% of range)
Temperature	-80°C to +150°C	±0.08°C
Frequency	3Hz to 300kHz	± (0.007% of rdg + 0% of range)

Description	Mfrs. List No.	Order Code	Price Each 1+
Bench Multimeter	34410A	**144-0376**	875.00
Bench Multimeter	34411A	**144-0377**	1,393.00
Test Lead Set	34138A	**144-0379**	18.35

Dual Display Digital Benchtop DMM

Agilent Technologies

With GPIB interface and 50K extended memory as standard (for a limited period)

NEW

SPECIAL OFFER* *While Stock Lasts

The 34450A is an intuitive and easy to use tool that provides a wide range of measurement functions such as DC voltage, DC current, True RMS AC voltage and AC current, 2-wire and 4 wire resistance, frequency, diode test, continuity, capacitance and temperature. Simplify your day-today task with up to 50,000 memory points, allowing you to capture and log up to 14 hours of data. Built-in with histogram and basic statistical functions, you can now do simple data analysis within the unit itself. With its ultra-bright OLED dual display, different measurements can be performed ensuring you get the right readings at first glance.

- Fast reading speed of up to 190 readings/sec
- 0.015% DCV accuracy
- 11 measurement functions
- OLED with dual display capability
- Up to 50,000 memory points for data logging and histogram function
- Built-in Histogram function
- Connectivity option: USB, serial connector and w/ GPIB Option
- Trigger In/Out
- Enhanced UI
- Dual function display
- 4 wire measurements

AC Voltage	100mV to 750V
DC Voltage	100mV, 1V, 10V, 100V, 1kV
AC Current	10mA to 10A
DC Current	100μA, 1mA, 10mA, 100mA, 1A, 10A
Resistance	100ohm, 1kohm, 10kohm, 100kohm, 1Mohm, 10Mohm, 100Mohm
Capacitance	1nF, 10nF, 100nF, 1μF, 10μF, 100μF, 1mF, 10mF
Frequency	119.999Hz, 1.19999kHz, 11.9999kHz, 119.999kHz, 1.19999MHz
Temperature	-80°C to +150°C
Continuity	1000ohm
Diode Test	1V
Power Supply	100V / 120V / 220V / 240V
Operating Temperature	0°C to 55°C
Dimensions	103.8 x 261.1 x 303.2mm
Weight	3.75kg

Kit Contents: Multimeter, Test lead set, Power cord, USN interface cable, Quick start guide, Product reference CD and Agilent IO library suite CD-ROM.

Continues on next page

Mftrs. List No.	Description	Order Code	Price Each 1+
34450A	Multimeter	**225-0788**	507.00
Accessories			
34138A	Test Lead Set	**144-0379**	18.35
10833D	GPIB Cable Assembly - 0.5m	**121-4530**	50.61
10833A	GPIB Cable Assembly - 1m	**121-4526**	52.71
10833B	GPIB Cable Assembly - 2m	**121-4527**	59.30
10833C	GPIB Cable Assembly - 4m	**121-4528**	65.88
10833F	GPIB Cable Assembly - 6m	**121-4531**	79.06
10833G	GPIB Cable Assembly - 8m	**121-4532**	85.65
82350B	PCI GPIB Interface Card	**121-4521**	399.00
82357B	USB/GPIB Interface	**142-5679**	407.00

Data Acquisition and Switching System

Agilent Technologies

BEST SELLER

SPECIAL OFFER* *While Stock Lasts

W=254, H=104, D=374mm. Weight 3.6kg

A three-slot mainframe with a built-in 6½ digit digital multimeter. Each channel can be configured independently to measure one of 11 different functions without the added cost or hassles of signal-conditioning accessories. Choose from eight optional plug-in modules to create a compact data logger, full-featured data acquisition system **34970A** cost switching unit. The New 34972A mainframe features LAN and USB interfaces which bring the added benefit of instant connectivity and easy access and control for remote applications.

Agilent BenchLink Data Logger software is included with the 34970A/34972A. BenchLink Data Logger gives you a familiar Microsoft Windows interface for test configuration and real-time data display and analysis. Setup and make measurements quickly, export data or use the built-in graphs to log your results.

- 3-slot mainframe with built-in GPIB and RS232 interfaces 61/2-digit (22-bit) internal DMM, scanning up to 250 channels per second
- 8 switch and control plug-in modules to choose from
- Built-in signal conditioning measures thermocouples, RTDs and thermistors, ac/dc
- Volts, current; resistance; frequency and period measurements
- 50k readings of non-volatile memory holds data when power is removed
- Hi/LO alarm limits on each channel, plus 4 TTL alarm outputs
- 34972A has built-in LAN, USB and Web interfaces to support remote data logging applications
- **Promotion:** Buy either an Agilent 34970A or 34972A Data Acquisition Unit and receive a FREE Licence for BenchLink Data Logger Pro software from Agilent - Just register your purchase on **www.agilent.com/find/DAQPromoEMEA** - Available until end of August 2013

	Ranges	Best Accuracy
AC Voltage	100mV, 1V, 10V, 100V, 300V	±(0.04% rdg + 0.03 range)
DC Voltage	100mV, 1V, 10V, 100V, 300V	±(0.0015% rdg + 0.0004 range)
AC Current	10mA, 100mA, 1A	±(0.1% rdg + 0.04 range)
DC Current	10mA, 100mA, 1A	±(0.01% rdg + 0.004 range)
Resistance	100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ, 100MΩ	±(0.002% rdg + 0.0005 range)
Frequency	3Hz to 300kHz	±0.006%
Temperature	-150°C to 1200°C	1.0°C

Accessories Included:
Operating, Calibration Certificate and Service Manuals on CD-ROM, Test Report and power lead. Agilent Benchmark Data Logger software, thermocouple, screwdriver.
Modules are purchased separately and are required to operate.

Modules

Model	Description	Type	Speed (ch/s)	Max Volts	Max Amps	Bandwidth	Thermal Offset
34901A	20ch Multiplexer	2-wire armature	60	300V	1A	10MHz	<3µV
34902A	16ch Multiplexer	2-wire reed	250	300V	50mA	10MHz	<6µV
34903A	20ch Actuator	SPDT / form C	120	300V	1A	10MHz	<3µV
34904A	4x8 Matrix Switch	2-wire armature	120	300V	1A	10MHz	<3µV
34905A	Dual 4ch RF Mux, 50Ω	Common Low	60	42V	0.7A	2GHz	<6µV
34907A	Multifunction Module	2x 8-bit Digital IO		42V	400mA		
		26-bit Event Counter		42V		100kHz	
		2x 16-bit Analog o/p		±12V	10mA	dc	
34908A	40ch Single-Ended Mux	1-wire armature	60	300V	1A	10MHz	<3µV

Description	Mftrs. List No.	Order Code	Price Each 1+
Data Acquisition Unit	34970A	**133-5867**	1,077.00
Data Acquisition Unit	34972A	**178-0338**	1,244.00
Multiplexer - 20ch	34901A	**133-5869**	324.00
Multiplexer - 16ch	34902A	**133-5871**	394.00
Actuator/Switch - 20ch	34903A	**133-5872**	279.00
Matrix Switch - 4x8	34904A	**133-5873**	350.00
4ch RF Multiplexer - 50Ω	34905A	**133-5874**	511.00
Multifunction Module	34907A	**133-5876**	261.00
Multiplexer - 40ch	34908A	**133-5877**	334.00

DMM + FREE U1177A IR-to-Bluetooth® Adapter

Agilent Technologies

SPECIAL OFFER* *While Stock Lasts

U1230 Series

NEW

CALIBRATION SERVICES

Whether it is dark, noisy or even dangerous, the U1230 Series handheld digital multimeter keeps you equipped with features that anticipate worstcase scenarios. The ergonomic shaped handheld allows you to single-handedly illuminate the test area with a built-in flashlight while selecting measurement functions using the rotary dial. Vsense performs non-contact voltage detection while continuity detection is made easy with the audible beeper alert and flashing backlight display. With the U1230 Series, you work better in the conditions you are in.

- Built-in LED flashlight to illuminate test area
- Flashing backlight as additional visual alert during continuity tests in noisy environments
- Vsense to perform non-contact voltage detection
- Data logging capability (stores up to 10 readings)
- IR-to-USB connectivity to transfer data to PC for record
- Freezes and stores current measurement value
- Low input impedance to eliminate ghost voltage measurement
- Anti-slip rotary dial for easy measurement function selection
- Bar graph indication and frequency measurement path

Model	U1231A	U1232A	U1233A
DC Voltage	600mV to 600V	600mV to 600V	600mV to 600V
AC Voltage	600mV to 600V	600mV to 600V	600mV to 600V
DC Current	–	60µA to 10A	60µA to 10A
AC Current	–	60µA to 10A	60µA to 10A
Resistance	600ohm to 60Mohm	600ohm to 60Mohm	600ohm to 60Mohm
Frequency	99.99Hz to 99.99kHz	99.99Hz to 99.99kHz	99.99Hz to 99.99kHz
Capacitance	1000nF to 10mF	1000nF to 10mF	1000nF to 10mF
Temperature	–	–	-40°C to +1372°C

Mftrs. List No.	Order Code	Price Each 1+
U1231A+U1177A	**208-4544**	76.28
U1232A+U1177A	**208-4546**	104.00
U1233A+U1177A	**208-4547**	127.00

DMM + FREE U1177A IR-to-Bluetooth® Adapter

Agilent Technologies

True RMS

SPECIAL OFFER* *While Stock Lasts

U1241B and U1242B

CALIBRATION SERVICES

The U1240B series of multimeters enable you to check more with wide measurement ranges, they feature true-RMS readings on a 10,000 count display. The adjustable backlighting enables viewing even in subdued lighting conditions, and prolongs the battery life. Supplied with a certificate of calibration and test report. The **U2142B** has additional functionality such as manual **datalogging,** harmonic ratio, dual temperature and differential temperature capabilities.

- 10,000 count display
- 0.09% basic DC voltage accuracy and true RMS measurement
- Basic functions: DCV, DCI, ACV, ACI, resistance, frequency, continuity, diode test
- Advanced functions (U2141A): capacitance, temperature, switch counter
- Advanced functions (U2142A): capacitance, temperature, switch counter, harmonic ratio, dual temperature (T1, T2, T1-T2)
- Manual and autoranging
- Continuity beeper and diode test
- Adjustable backlighting
- Min/Max recording
- Built-in probe holder
- Overmould body casing
- CAT III 1000V OV protection
- Certified to CE, CSA, and UL standards
- Powered by 4 x AAA batteries
- Dimensions (HxWxD): 194 x 92 x 58mm

Supplied with batteries, certificate of calibration, test leads, quick start guide and product reference CD.

	Maximum	Max. Resolution	Best Accuracy
DC Voltage	1000V	0.1mV	±(0.09%+2)
AC Voltage	1000V	0.1mV	±(1.0%+5)
DC Current	10A	0.1µA	±(0.1%+3)
AC Current	10A	0.1µA	±(1.5%+3)
Resistance	100MΩ	0.1Ω	±(0.8%+3)
Capacitance	10mF	0.1nF	±(1.2%+4)
Frequency	100kHz	0.01Hz	±(0.03%+3)
Temperature *	-40 to 1000°C	0.1°C	1% + 1 °C/

* Thermocouple type K (for U1241A and U1242A), type J (for U1242A only)

Mfrs. List No.	Order Code	Price Each
U1241B+U1177A	**208-4540**	155.00
U1242B+U1177A	**208-4541**	171.00

DMM + FREE U1177A IR-to-Bluetooth® Adapter

Agilent Technologies

SPECIAL OFFER* *While Stock Lasts

True RMS

U1251B and U1252B

- 50000 counts resolution on both displays
- 100 manual data storage points
- True RMS measurements
- dBm measurements
- Diode test
- Duty cycle measurements
- Pulse width measurement
- Peak Hold
- IR to USB connectivity (optional U1173B connectivity cable sold separately)
- -20°C to + 55°C operating temperature
- IEC61010-1 Cat III 1000V safety compliance
- Robust overmoulded design with multi-function tilt stand

U1252B Additional Features:

- 20 MHz frequency counter
- Programmable square wave generator
- Built-in battery charger capability
- Support for J type thermocouple

Full featured handheld multimeters that offer maximum versatility for current and future needs. 4½ digit dual display handheld multimeters featuring accuracy up to 0.025%, true RMS, temperature, capacitance and frequency measurements on top of data-logging and PC connectivity capability.

	Ranges	Best Accuracy U1251A	Best Accuracy U1252A
AC Voltage	50mV to 1kV	± 0.6% + 20 counts	± 0.4% + 25 counts
DC Voltage	50mV to 1kV	± 0.03% + 5 Digits	± 0.025% + 5 Digits
AC Current	500µA, 5mA, 50mA, 440mA, 5A, 10A	± 0.8% + 20 counts	± 0.7% + 20 counts
DC Current	500µA, 5mA, 50mA, 440mA, 5A, 10A	± 0.8% + 20 counts	± 0.7% + 20 counts
Resistance	500ohm to 500Mohm	± 0.08% + 5 counts	± 0.05% + 5 counts
Capacitance	10nF - 100mF (9 ranges)	± 1% + 5 counts	± 1% + 5 counts
Temperature	-200°C to +1372°C	0.3% + 3°C	0.3% + 3°C
Frequency	99.999Hz to 999.99kHz	± 0.02% + 3 counts	± 0.02% + 3 counts
Battery Requirements		9V Alkaline	7.2V Rechargeable

Accessories Included:
Soft carrying case, Battery, U1160B Standard Test Lead Kit, Quick Start Guide, User Guide, PC Software, Instrument Drivers, AC adaptor (U1252B only).

Mfrs. List No.	Order Code	Price Each
U1251B+U1177A	**208-4538**	294.00
U1252B+U1177A	**208-4539**	316.00

Digital Storage Oscilloscopes

TENMA

25Mhz-200Mhz

- Dual channel
- HD colour LCD display system at 320 x 240 resolution
- Supports plug-and-play USB storage devices and capable of communicating with a computer through the USB storage device
- Automatic waveform and status configuration
- Storage of waveforms, setups and bit map and waveforms, setups recurrence
- Sophisticated window expansion function to analyse waveform details and overview precisely
- Automatic measurement of 19 waveform parameters
- Automatic cursor tracing measurement
- Unique wave recording and replay function
- Built-in FFT
- Multiple waveform mathematics functions (including add, subtract, multiply and divide)
- Edge, video, pulse width and alternate trigger functions
- Multilingual menu displays

Sample Rate	500MS/s		
Sample Rate (72-8395)	250MS/s		
Trigger Type	Edge, Pulse, Video and Alternate		
Auto Waveform Measurements	28		
Dimensions (WxHxD)	320x150x130mm		
Weight	4kg		
	72-8395	**72-8225**	**72-8230**
Bandwidth	25 MHz	40 MHz	60 MHz
Rise Time	<14ns	<8.7ns	<5.8ns
	72-8240	**72-8245**	**72-8250**
Bandwidth	100 MHz	150 MHz	200 MHz
Rise Time	<3.5ns	<2.3ns	<1.8ns

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
72-8395	25MHz	**173-9448**	300.04
72-8225	40MHz	**173-9443**	340.18
72-8230	60MHz	**173-9444**	389.27
72-8240	100MHz	**173-9445**	525.81
72-8245	150MHz	**173-9446**	603.58
72-8250	200MHz	**173-9447**	844.48

Digital Storage Oscilloscopes

NEW

TENMA CALIBRATION SERVICES

4 Channel

Tenma DSO four-channel digital storage oscilloscope offers a user-friendly front panel with clear indications to allow access to all basic functions for easy operation. The scaling and position buttons for all channels are optimally arranged for intuitive operation. The design is based on the familiar practices of traditional instruments users can use the new units without spending considerable time in learning and familiarizing with operation. For faster adjustment to ease testing, there is an Auto key to instantly display the appropriate waveform and range position.

- 2GS/s real-time sampling rate and 50GS/s equivalent sampling rate
- Dual time base function unrivaled waveform detail observation and analysis capabilities
- Scroll display in scan mode for continuous monitoring of signal variations
- Unique XY mode that displays the waveform and Lissajous figure concurrently
- USB drive system software upgrade
- Supports plug-and-play USB storage device. Communication with computer through the USB device
- Storage of waveforms setups and bit maps waveforms and setups reproduction
- Built-in FFT
- Multiple waveform mathematics functions (including add, subtract, multiply and divide)
- Edge, video, pulse, slope and alternate trigger functions
- Automatic measurement of 24 waveform parameters parameters testing and customization
- Multiple AUTO setups for extra flexibility
- Visual system help messages

	72-8725	**72-8727**
Bandwidth	100MHz	200MHz
Sample Range		
Sample Method	Real Time	Equivalent
Sample Rate	2GS/s	50GS/s
Input		
Input Coupling	DC, AC or Grounding (AC, DC, GND)	
Input Impedance	1MΩ±2%, and 16±3pF	
Horizontal		
Records length	1024k	
Storage Depth	24k(Max)	
Multimeter Function		
DC Voltage	Range: 400mV, 4V, 40V, 400V	Accuracy: ± (1% + 5 digits)
AC Voltage	Range: 400mV, 4V, 40V, 400V	Accuracy: ± (1.2% +5 digits)
Display		
Display type	5.7 inch LCD display	
Display Resolution	320xRGBx240 (TFT)	
Environment		
Temperature	Operating Environment: 0°C - +40°C Non-Operating Environment: -20°C - +60°C	

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
72-8725	100MHz	**183-6063**	639.67
72-8727	200MHz	**206-1824**	1,104.19

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Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.

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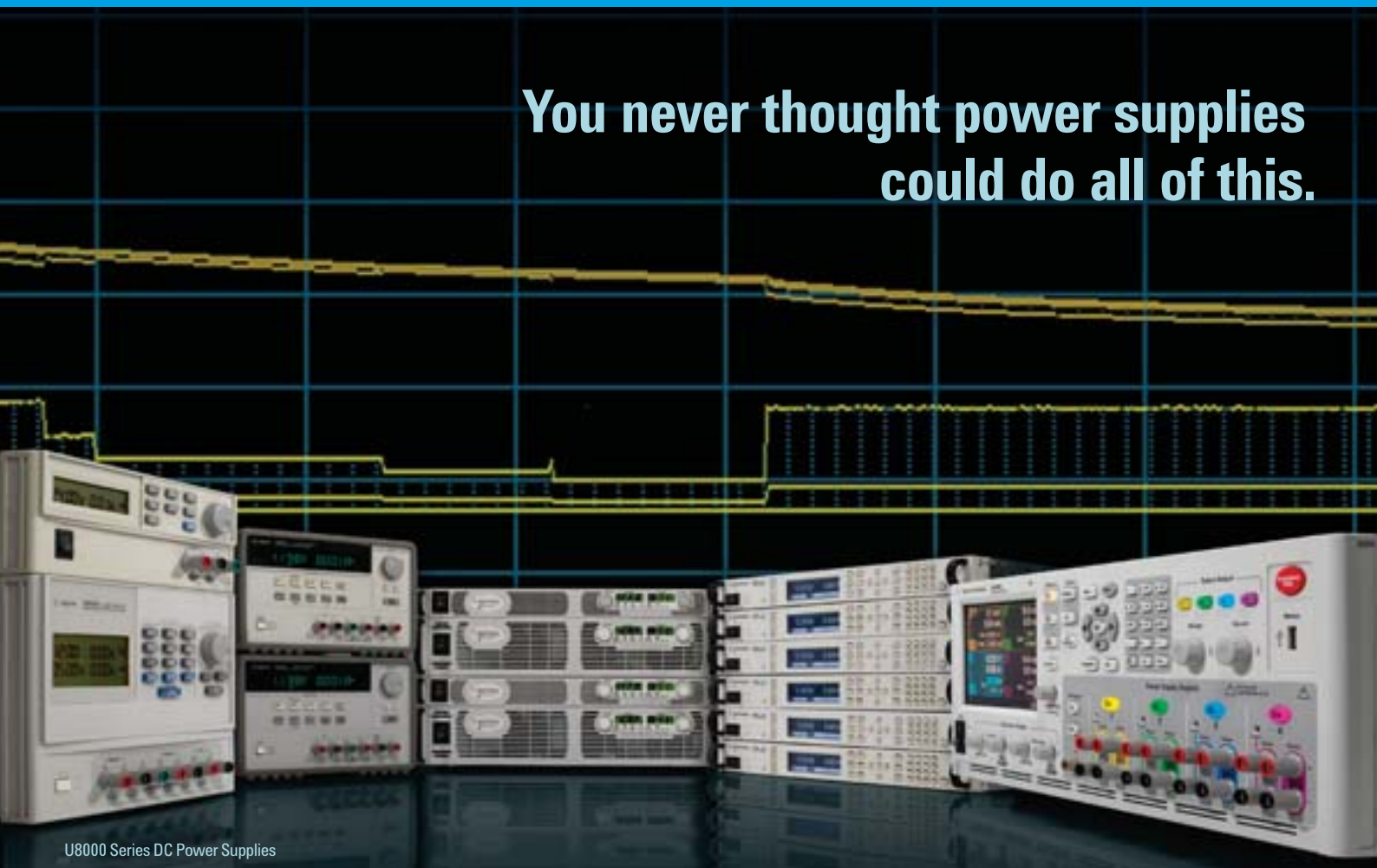
You never thought power supplies could do all of this.



U8000 Series DC Power Supplies

N6705B DC Power Analyzer

Fortunately, we did.

Built to the latest standards and technologies, Agilent DC Power Supplies are designed with more than just power in mind. And with over 200 power supply choices, imagine what you could achieve by adding one to your bench.

- Ensure DUT safety with built-in safety features
- Increase throughput with the fastest processing time in the industry
- Gain insights with advanced analytics and scope-like display (N6705B)

Scan or visit http://qrs.ly/4223yzg to view power supply application videos

Farnell element14

To build a more powerful bench, download our power supply catalog at www.agilent.com/find/catalogWW

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Anticipate Accelerate Achieve

Agilent Technologies

USB DSO Oscilloscopes

40Mhz-200Mhz 2-channel Models

NEW

- USB2.0 interface with no external power source required
- 23 measurement functions
- PASS/FAIL Check
- Waveform average, persistence, intensity, invert, addition, subtraction, multiplication, division, X-Y plot
- Save waveform in the following: text file, jpg/bmp graphic file, MS excel/word file
- One computer can connect many DSO, extend channel easily
- Labview\VB\VC\Delphi\C++ Builder Second Design instance
- Be suitable for notebook computer, product line maintenance, be used easily on business
- Multi-language interface

	72-10155	72-10160	72-10165	72-10170
No. of Channels	2			
Bandwidth	40MHz	60MHz	100MHz	200MHz
Impedance	1MΩ			
Max. Sample Rate	100MS/s	150MS/s	250MS/s	200MS/s
Coupling	AC, DC, GND			
Vertical Resolution	8 bit			
Trigger Mode	Auto, Normal, Single			
Trigger Slope	+/-			
Trigger Type	Rising Edge, Falling Edge			
Trigger Source	CH1, CH2, EXT			
Buffer Size	10K to 32KB per Channel			
Math	FFT, addition, subtraction, multiplication, division			
Operating System	Windows Me, Windows NT, Windows 2000,Windows XP, VISTA			
Dimensions	190x100x35mm			

Kit Contents: Oscilloscope, Software CD, Probes, Manual and USB lead.

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
72-10155	40MHz	**214-6562**	198.45
72-10160	60MHz	**214-6564**	229.95
72-10165	100MHz	**214-6565**	303.45
72-10170	80MHz	**214-6566**	329.00

USB DSO Oscilloscopes

60Mhz - 2 or 4-channels

NEW

- 60MHz bandwidth
- EXT trigger
- 200MSa/s real-time sampling rate
- 10k to16M memory depth per Channel
- Arbitrary Waveform Generator
- 25MHz arbitrary waveform output,(sine wave can deliver up to 75MHz) 200MSa/s DDS,12bits of vertical resolution
- Frequency Counter, FFT spectrum analysis
- 8 to 36V input voltage suitable for vehicle power test
- USB 2.0 interface plug and play
- More than 20 kinds of automatic measurement function, PASS/FAIL Check function, is suitable for engineering application
- Excellent industrial design, similar interface with bench oscilloscope
- Multi-language interface

	72-10155	72-10160
Vertical		
No. of Channels	4	2
Bandwidth	60MHz	
Rise Time	5.8ns	
Impedance	1MΩ	
Input Sensitivity	10mV/div to 5V/div	
Coupling	AC, DC, GND	
Vertical Resolution	8 bit	
Memory Depth	10K to 16M per Channel	
Horizontal		
Real Time Sampling Rate	200MS/s	
Time Base Precision	5ns/div to 1000s/div	
Trigger		
Source	CH1, CH2, CH3, CH4, EXT	
Mode	Edge, Pulse, Video, Alternative	
Measurement		
Voltage Measurement	Vpp, Vamp, Vmax, Vmin, Vtop, Vmid, Vbase, Vavg, Vrms, Vcrms, Preshoot, Overshoot	
Time Measurement	Frequency, Period, Rise Time, Fall Time, Positive Width, Negative Width, Duty Cycle	
Waveform Signal Process	+, -, ×, ÷, FFT, Invert	
Voltage Range	10mV to 5V, 100mV to 50V, 1V to 500V, 10V to 5kV, 100V to 50kV, 200mV to 100V	
FFT	Rectangular, Hanning, Hamming, Blackman Window	
Math	Adition, subtraction, multiplication, division	
Arbtrory Wave Form		
Waveform Frequency	25MHz	
DAC	2K to 200MHz adjustable	
Vertical Resolution	12 bit	
Impedance	50	
General		
Interface	USB 2.0	
Input Voltage	8V to 36V	
Dimensions	255x190x45mm	
Weight	1kg	

Kit Contents: Oscilloscope, Software CD, Probes, Carry Case, USB lead, Power Adapter and BNC Lead.

Mftrs. List No.	No. of Channels	Order Code	Price Each 1+
72-10177	4 Analogue	**214-6567**	418.95
72-10179	2 Analogue	**214-6568**	271.95

Handheld Oscilloscopes

2 Channel

- Continuity buzzer
- Diode
- Trend diagram
- Manual / Auto ranging

NEW

	72-9355	72-9360	72-9365
Bandwidth	60MHz	100MHz	200MHz
Rise Time	5.8ns	3.5ns	1.8ns
Sampling Rate	250MSPS	500MSPS	1GSPS
Trigger Type	Edge, Pulse, Video and Alternate		
Auto Waveform Measurements	27		
Frequency Counter	6 digits frequency counter		
Ports	USB Host		
Mathematics	Add, Subtract, Multiply, Divide, FFT		
Interface	Colour and Mono display selectable		
Power	Battery or Power Adaptor		
Battery Life	3 Hours		
AC Current	6mA, 60mA, 600mA, 6A		
DC Current	6mA, 60mA, 600mA, 6A		
AC Voltage	600mV, 6V, 60V, 600V, 700V		
DC Voltage	600mV, 6V, 60V, 600V, 1000V		
Capacitance	6nF, 6mF, 60nF, 600nF, 6µF, 60µF, 600µF		
Resistance	600Ω, 6MΩ, 60MΩ, 6kΩ, 60kΩ, 600kΩ		
Display Count	5999		
Weight	1.8kg		
Dimensions	268 x 168x 60mm		

Kit Contents: Handheld oscilloscope, 2 x probe, 2 x current voltage convertors, power cord, DC adaptor, test lead and manual.

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
72-9355	60MHz	**206-1825**	735.01
72-9360	100MHz	**206-1826**	935.78
72-9365	200MHz	**206-1827**	1,069.61

Bench Power Supply - Variable Voltage

NOW UPGRADED

NEW

- Variable voltage and current
- Low ripple and noise
- Switch mode technology for improved operating efficiency
- Compact ergonomic design occupies a small bench area

	72-8350A	72-8345A	72-8A340A
Input Voltage	90 to 130, 180 to 264Vac		
Full Load Input Current	0.83A		
Output Voltage Range	1 to 20Vdc	1 to 36Vdc	1 to 60Vdc
Load Regulation	10% to 100%		
Line Regulation	180V to 264V ac		
Switching Operation Frequency	80KHz to 120KHz		
Efficiency at Max Power	84%	83%	81%
Display	4 Digit		
Protection	Short Circuit, Overload, Over Temperature, Tracking OVP		
Dimensions (WxHxD)	70 x 150 x 250mm		
Weight	2Kgs		

Mftrs. List No.	Order Code	Price Each 1+
72-8340A	**221-6729**	83.18
72-8345A	**221-6730**	83.18
72-8350A	**221-6731**	83.18

Bench Power Supply

TENMA

Dual Output

NEW

- Complete digital control
- Dual output
- 10mV / 1mA resolution
- Low noise and ripple
- CV / CC constant voltage and constant current mode
- OCP and OVP settings, constant protection mode
- 5 sets of parameters can be stored and recalled
- Output switch control
- Power-off memory function
- Keyboard lock function

NOW UPGRADED

Model	72-10495	72-10500
Voltage Range	0V to 30V	
Current Range	0A to 5A	0A to 3A
Operating Temperature	0 to 40	
Dimensions	220 x 280 x 160mm	
Weight	9kg	7kg

Kit Contents: Power supply, User manual, UK power cord and Euro power cord.

Mftrs. List No.	Order Code	Price Each 1+
72-10495	**225-1947**	119.00
72-10500	**225-1948**	109.00

DC Power Supplies

TENMA

CALIBRATION SERVICES

NEW

210mm x 152mm x 305mm

NOW UPGRADED

- Low ripple & noise linear regulated bench power supplies
- 2 x 3 digit LED's for voltage & current indication
- Constant voltage & constant current modes
- Series or parallel operation
- Test leads, Manual, UK & Euro mains included

		72-8690	72-8695	72-8700
Output Voltage	Ch1, Ch2	0-32V	0-32V	0-32V
	Ch3		5V	
Output Current	Ch1, Ch2	0-1A	0-3A	0-5A
	Ch3		2A	
Overload Effect		CV ≤ 1 x 10-4 +2mV, CC ≤ 2mA		
Ripple & Noise		CV ≤ 1mVrms, CC ≤ 1mArms		
Regulation		CV -20mV (Typical Value), CC -50mV (Typical Value)		
Tracking Error		5 x 10 -3 +2mV		

Mftrs List No.	Order Code	Price Each 1+
72-8690	**183-6056**	131.06
72-8695	**183-6057**	139.42
72-8700	**183-6058**	172.88

Bench Multimeter – True RMS

True RMS

TENMA

CALIBRATION SERVICES

72-1016

W=105, H=240, D=310mm. Weight 2.4 kg

A bench top DMM with true RMS measurement of AC signals and LED display. Supplied with test leads, UK and Euro power leads, user manual, temperature probe, Alligator clips, multi-purpose test socket, RS232C interface cable and communications software.

- 5,999 count LCD display
- Backlit, full icon display
- Fused 10A measuring range
- Autoranging
- True RMS measurement with 100kHz bandwidth
- Diode, Continuity and Transistor tests
- Max/Min mode and data hold
- Low battery display and sleep mode
- Connect to PC via RS232 (software and cable included)
- Powered by mains lead or 6x C batteries (not included)
- Neat, built-in accessory storage compartment

	Ranges	Best Accuracy
AC Voltage	600mV/6V/60V/600V/1000V	±(0.6%+5)
DC Voltage	600mV/6V/60V/600V/1000V	±(0.3%+2)
AC Current	600µA/6mA/60mA/600mA/10A	±(1.0%+5)
DC Current	600µA/6mA/60mA/600mA/10A	±(0.5%+3)
Resistance	600Ω/6kΩ/60kΩ/600kΩ/6MΩ/60MΩ	±(0.5%+2)
Capacitance	6nF/60nF/600nF/6µF/60µF/600µF/6mF	±(2.0%+5)
Temperature	-40°C - 1000°C	±(1.0%+3)
Frequency	6kHz/60kHz/600kHz/6MHz/60MHz	±(0.1%+3)

Description	Mfrs. List No.	Order Code	Price Each 1+	5+
Bench Multimeter	72-1016	**119-6432**	115.94	107.75

Autoranging Multimeters

TENMA

72-7735, 72-7740 and 72-7745

H=171, W=86, D=38mm

H=171, W=86, D=38mm

H=171, W=86, D=38mm

Full function multimeters that offer a variety of ranges for every service application. Rugged overmolded housing stands up to the daily rigors of field service use, and large LCD display is easily read from several feet away. Measures AC/DC voltage, AC/DC current, resistance, capacitance, frequency, temperature (72-7740 and 72-7745 only) and duty cycle. 3-3/4 digit, 3999 count display features 3/4" digits and numerous on-screen icons, for easy at-a-glance reading.

- Switchable auto/manual range
- Diode check
- Continuity buzzer
- Data hold
- Full icon display
- Relative mode
- Low battery display
- Included standard test leads, plus separate short leads for accurate capacitance checking
- Comes complete with standard 9V battery and owners manual
- Meets 600V CATIII, and 1000V CATII standards

72-7735 extra features
- RS232C

72-7740 extra features
- Sleep mode
- Temperature measurement (°C only)
- Thermocouple temperature probe
- Display backlight

72-7745 extra features
- True RMS
- RS232C
- Display backlight
- Temperature measurement (°C only)
- Thermocouple temperature probe

	Gamme	Précision
DC Voltage	400mV, 4V, 40V, 400V, 1000V	±(0.8%+1)
AC Voltage	4V, 40V, 400V, 750V	±(1%+5)
	400µA, 4000µA, 40mA, 400mA, 4A, 10A	±(1%+2)
Current AC	400µA, 4000µA, 40mA, 400mA, 4A, 10A	±(1.5%+5)
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ	±(1%+2)
Capacity	40nF, 400nF, 4µF, 40µF, 100µF	±(3%+5)
Temperature (72-7740 and 72-7745)	-40°C - 1000°C	±(1%+3)
Frequency	10Hz - 10MHz	±(0.1%+3)

347434.403297

Mftrs. List No.	Order Code	Price Each 1+
72-7735	**743-0590**	37.81
72-7740	**743-0604**	43.66
72-7745	**743-0612**	58.93

TRMS USB Digital Multimeters

TENMA

Kit Contents: Multimeter, battery, test lead, alligator clip, test clip, USB interface cable, PC software CD, carrying bag, point contact temperature probe and english manual.

NEW

- 100KHz bandwidth
- Auto ranging
- True RMS
- USB interface
- Diode check

Continues on next page

	72-7730A	72-7732A	72-9380A
Measurement Ranges			
AC Voltage	2V, 20V, 200V, 1kV	4V, 40V, 400V, 1kV	
DC Voltage	200mV, 2V, 20V, 200V, 1kV	400mV, 4V, 40V, 400V, 1kV	
AC Current	200µA to 10A	400µA, 4000µA, 40mA, 400mA, 10A	
DC Current	200µA to 10A	400µA, 4000µA, 40mA, 400mA, 10A	
Resistance	200ohm, 2kohm, 20kohm, 200kohm, 2Mohm, 20Mohm	400ohm, 4kohm, 40kohm, 400kohm, 4Mohm, 40Mohm	
Capacitance	20nF, 200nF, 2µF, 20µF, 200µF, 2mF, 20mF	40nF, 400nF, 4µF, 40µF, 400µF, 4mF, 40mF	
Frequency	20Hz to 200Hz	40Hz to 400Hz	
Temperature	-40°C to +1000°C		
Power	–	–	2500W
General			
Display Count	19999	39999	
LCD Size	73 x 50mm		
Dimensions	200 x 93 x 40mm		
Weight	384g		

Mftrs. List No.	Order Code	Price Each 1+
72-7730A	**210-0035**	85.05
72-7732A	**210-0036**	124.36
72-9380A	**210-0037**	177.34

Handheld Automotive Multimeters

NOW UPGRADED

NEW

- Continuity test (with buzzer)
- Diode test
- Data Hold function
- Low battery indication

These digital automotive multimeters measure AC/DC voltage and current, resistance, frequency, capacitance, temperature, tach and dwell, and tests continuity and diodes.

72-9275 Kit Contents: Test Lead, battery, english manual, holster and point contact temperature probe.

72-9280 Kit Contents: Test Lead, battery, english manual, RS232 interface cable and software.

	72-9275	72-9280
AC Current	–	400µA, 4000µA, 40mA, 400mA, 4A, 10A
DC Current	200mA, 10A	400µA, 4000µA, 40mA, 400mA, 4A, 10A
AC Voltage	200V to 750V	4V, 40V, 400V, 1kV
DC Voltage	200mV, 2V, 20V, 200V, 1kV	4V, 40V, 400V, 1kV
Capacitance	–	10nF, 100nF, 1000nF, 10µF, 100µF
Frequency	2kHz	10Hz to 1MHz
Resistance	200ohm, 2kohm, 20kohm, 200kohm, 2Mohm, 20Mohm	400ohm, 4kohm, 40kohm, 400kohm, 4Mohm, 40Mohm
Temperature	-40°C to +1000°C	
Max. / Min. Mode	×	✓
Sleep Mode	×	✓
Display Backlight	×	✓
RS232 (USB)	×	✓
Display Count	1999	3999
Power	9V	
LCD Size	60 x 54mm	65 x 43mm
Weight	352g	362g
Dimensions	179 x 88 x 39mm	180 x 87 x 47mm

Mftrs. List No.	Ranging	Order Code	Price Each 1+
72-9275	Manual	**205-9979**	24.54
72-9280	Auto	**205-9980**	54.66

Clamp Meters with Frequency

72-7224 and 72-7226

W=90 H=260 D=45mm. Weight 530g

Perfect for general purpose applications, this compact clamp meter measures AC/DC voltage, AC/DC current, resistance, frequency and duty cycle.

- 3999 count autoranging display
- 10MΩ input impedance
- 25mm clamp diameter
- Relative mode
- Diode test and Continuity buzzer
- Data hold
- Sleep mode and Low battery indicator
- Powered from 1x 9V battery (included)
- Supplied with zipper case, test leads, owners manual

Additional Features: Model 72-7226

- True RMS AC measurements

Mftrs. List No.	Order Code	Price Each 1+	3+
72-7224	**128-3640**	33.11	29.80
72-7226	**128-3641**	49.69	42.97

Digital Clamp Meters

NOW UPGRADED

72-94XX

NEW

- Auto ranging
- Data hold
- True RMS (72-9485 and 72-9490 only)
- USB interface (72-9490 only)
- Single and 3 phase (72-9490 only)

Kit Contents 72-9480: Multimeter, test lead, battery, manual, temperature probe and carry bag.

Kit Contents 72-9485: Multimeter, test lead, battery, manual and tool box.

Kit Contents 72-9490: Multimeter, test lead, battery, manual, alligator clips, USB interface cable, software and tool box.

	72-9480	72-9485	72-9490
Measurement Range			
AC Voltage	4V, 40V, 400V, 600V	400mV, 4V, 40V, 400V, 600V	15V, 100V, 300V, 600V
DC Voltage	400mV, 4V, 40V, 400V, 600V	400mV, 4V, 40V, 400V, 600V	–
AC Current	–	40A, 1000A	40A, 100A, 400A, 1000A
DC Current	40A, 600A	40A, 1000A	–
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF, 100µF	–	–
Frequency	10Hz to 10MHz	4kHz, 40kHz, 400kHz, 4MHz, 40MHz	20Hz to 500Hz
Temperature	-40°C to +1000°C	–	–
Resistance	400ohm, 4kohm, 40kohm, 400kohm, 4Mohm, 40Mohm	400ohm, 4kohm, 40kohm, 400kohm, 4Mohm, 40Mohm	–
Active Power	–	–	0.01kW to 600kW
Apparent Power	–	–	0.01kVA to 600kVA
Reactive Power	–	–	0.01kVAr to 600kVAr
Power Factor	–	–	0.3 ~ 1
Phase Angle	–	–	0° ~ 360°
Active Energy	–	–	1 ~ 9999kWh
General			
Display Count	3999	9999	4000
Power	9V	9V	6V
Dimensions	208 x 76 x 30mm	286 x 105 x 45mm	303 x 112 x 39mm
Weight	260g	533g	601g

Mftrs. List No.	Order Code	Price Each 1+
72-9480	**209-9730**	42.44
72-9485	**209-9732**	92.50
72-9490	**209-9733**	129.49

PCB Track Current Probe

NEW

UNIQUE DESIGN

Aim I-prober 520

The Aim I-prober 520 is a unique current measurement device. Measurement of current normally requires it to be passed through a closed magnetic loop, typically using a split clamp device. Whereas this is suitable for individual wires, it is often use for measuring current in PCB tracks. The I-Prober 520 uses positional H-field measurement. By placing the insulated tip of the probe onto a PCB track, the current flowing in the track can be observed and measured. The I-Prober 520 is supplied with a clip-on toroid assembly which converts it into a closed magnetic circuit probe for measuring current within a wire.

- High accuracy general purpose H-field probe
- Convertible into 'closed magnetic circuit' current probe
- Current measurement from isolated probing of conductor
- Dynamic range of 10mA to 20A peak to peak
- Wide bandwidth of DC to 5MHz
- Low noise equivalent to <6mA rms
- Safety rated to 300V Cat II
- Suitable for connection to any oscilloscope

Dynamic Characteristics	
Bandwidth	DC to 5MHz (small signal)
Pulse Rise Time	<70ns
Pulse Aberrations	<±5% (<1% at lower bandwidth settings)
Noise	6mA rms full bandwidth or 1.5mA rms at lower bandwidth settings (equivalent in toroid)
Filter Settings	Full bandwidth, 500kHz or 2Hz
PCB Track Mode	
Scaling	1 Amp per Volt or 2 Amp per Volt (with control adjusted to suit track width range 0·2mm to 6.5mm)
General	
Power Supply Voltage	5.2V DC from supplied AC line adaptor, 100V to 240V nominal 50/60Hz
Maximum Output Voltage	±10V, corresponding to ±2·5mT (field measurement) or ±10A (wire)
Maximum Track Voltage	300Vrms CAT II (circuits connected directly to the low voltage mains) or 600Vrms CAT I (circuits not connected directly to the low voltage mains)
Max. Track Temperature	Probe tip maximum working temperature is 150°C
Approvals	Complies with EN61010-1 (Safety) and EN61326 (EMC)

Mftrs. List No.	Order Code	Price Each 1+
IPROBER 520	**190-8148**	485.00

LET'S TALK ABOUT TAKING THE HASSLE OUT OF PRODUCT SELECTION.

"I want to be able to quickly buy all of the products I need, from the brands I know and trust, from one source."
ARM
Tektronix
EAGLE

BECAUSE EASIER IS BETTER.

- Over 3,500 industry leading suppliers
- Innovative niche manufacturers as well as world class brands
- Over 100 new technologies added online every day

Farnell element14

25MHz & 50MHz Function/ Arbitrary/Pulse Generator

TG5xx11 Series

W = 240mm,
H = 100mm,
L = 355mm,
Weight = 2.55kg

The TGxx11 series is the latest and most advanced digital function generator from TTi. Use of the latest FPGA technologies has achieved a much higher upper frequency than other generators in this price range. It incorporates a full graphic display and offers high quality standard waveforms, high speed arbitrary waveforms, and full pulse generator facilities. Internal or external digital modulations are available using any waveshape.

- 1µHz to 50MHz frequency range; 14 digits or 1µHz resolution (TG2511 - 1µHz to 25MHz)
- Standard waveforms include sine, square, ramp, pulse, sin(x)/x, exponents and noise
- True pulse generator mode with variable delay and variable rise/fall
- Arbitrary waveforms of up to 128K points at up to 125MS/s
- Waveform storage using USB flash drives
- Large graphic LCD with simultaneous text and waveform display
- Comprehensive internal/external modulations including AM, FM, PM, PWM and FSK
- 20mV to 20V pk-pk output from 50 Ohms ; plus multi function aux. out
- Storage for multiple instrument set-ups in non-volatile memory
- Half-rack 2U case with protective buffer and multi-position handle
- Waveform Manager Plus for Windows software included
- Programmable via USB and LAN interfaces; LXI class C compliant
- Safey & EMC complies with EN61010-1, EN61326
- For more information, please refer to the technical datasheet on **www.farnell.com**

Mftrs. List No.		Order Code	Price Each 1+
Generator with USB and LAN interfaces only			
TG5011	50 MHz	**179-1442**	877.00
TG2511	25 MHz	**182-5613**	779.00
Generator with USB, LAN and GPIB interfaces			
TG5011G	50 MHz	NEW **190-8150**	956.00
TG2511G	25 MHz	NEW **190-8151**	858.00

QL Digital Control Precision PSU's Standard & BUS Interfaced

The QL series are linear regulated power supplies offering superior performance including very high precision and full digital control. Output power is more than 100 watts per main output and switchable ranges enable a higher output current to be obtained at lower voltages. Settings can be done by numeric entry or by a spin wheel. Non-volatile memories are provided for instant recall of past settings. The P versions incorporate an isolated bus interface supporting GPIB, RS232, LAN and USB standards.

- Single output or triple output models
- Linked-mode operation of main outputs (T models)
- Auxiliary output variable 1V to 6V at 3A (T models)
- 35V/5A 105W max. or 56V/4A 112W max.
- Setting by direct numeric entry or spin wheel
- 1mV resolution at full output voltage
- Multiple ranges for increased current flexibility
- Excellent noise, regulation and dynamics
- Multiple non-volatile setting memories
- Comprehensive protection including OVP and OCP trips
- Switchable remote sense provides perfect load regulation
- Compact modular width for bench or rack
- Duplicate power and sense terminals at rear (P models)
- GPIB, RS232, LAN and USB interfaces (P version)
- Advanced user interface with numeric and rotary control
- Compact bench footprint; modular width for rack mounting
- For more information, please refer to the technical datasheet on **www.farnell.com**

Rack Mounting

A 4U rack mount is available which will take a maximum of three single units or one single plus one triple. Blanking plates are available for unused positions.

Mftrs. List No.	Order Code	Price Each 1+
Single Output		
QL355..	NEW **207-7420**	362.00
QL355P..	NEW **207-7421**	513.00
QL564.	NEW **207-7424**	362.00
QL564P.	NEW **207-7426**	513.00
Triple Output		
QL355T.	NEW **207-7422**	702.00
QL355TP.	NEW **207-7423**	874.00
QL564T	NEW **207-7427**	702.00
QL564TP	NEW **207-7428**	874.00
Rack Mount Options		
RM410 QL Series Rackmount Shelf	**151-0527**	86.00
RM415 QL Series Blanking Plate	**151-0528**	10.00

Standard or Programmable Power Supplies 840W Dual Output PowerFlex

CPX400D & CPX400DP

The CPX400D has two independent outputs of 420W each and incorporates smart control functions such as settings lock and isolated tracking. The CPX400DP adds a full range of digital control interfaces plus duplicate rear terminals.

- Dual isolated outputs, independent or tracking
- PowerFlex regulation with 840 watts of total power
- Up to 60V and up to 20A within a 420W power envelope on each output
- Isolated tracking provides up to 120V in series or up to 40A in parallel
- S-Lock function locks voltage and current settings at the touch of a button
- Range control buttons offers fixed range or PowerFlex operation
- 3U half-rack casing; front and rear terminals (CPX400DP only)
- Full range of bus interfaces, RS232, USB, GPIB and LAN with LXI (CPX400DP only)
- Safey & EMC complies with **EN61010-1**, **EN61326**
- For more technical information, please refer to the technical datasheet on **www.farnell.com**

Mftrs. List No.	Interfaces	Order Code	Price Each 1+
CPX400D		**185-3729**	833.00
CPX400DP	RS-232, USB, LAN (LXI), GPIB	**179-1444**	975.00

PicoScope 2000 series PC Oscilloscopes

- 10 MHz to 200 MHz bandwidth
- Up to 1 GS/s real-time sample rate
- 8 to 40 K record length
- Connected and powered via USB 2.0 (480 Mbps)
- Lightweight and compact size ideal for field use
- PicoScope 6 high-end oscilloscope software included
- Compatible with LabVIEW, C/C++, Delphi and VB
- Operates with Windows XP, Vista and 7

The PicoScope 2000 series has been designed to offer excellent performance at a price that represents the ultimate in value.

All-in-one instrument

Each model is an all-in-one full-function oscilloscope, spectrum analyser, signal generator and arbitrary waveform generator (AWG), making it extremely versatile and great value for money. Unbeaten for functionality and price, the PicoScope 2000 series is destined to impress with its compact footprint, and fits perfectly into a laptop or travel bag. The small, rugged case has three BNC connectors; two dedicated input channels and a dedicated BNC for the signal generator and arbitrary waveform generator.

Power and speed

The PicoScope 2000 series takes its power directly from the PC, and uses the full USB 2.0 bandwidth (480 Mbps) allowing a blistering screen update rate without compromising accuracy and detail.

High-end software

All PicoScope® PC Oscilloscopes are powered by high-end PicoScope 6 Windows software, with updates, feature extensions and improvements that will remain free for the lifetime of the product. PicoScope 6 is powerful yet easy to operate. Users benefit from the power of the PC, and the familiar Windows interface and controls, making the software

Continues on next page

easy to learn and easy to use on a daily basis. Data is easily saved in a variety of formats including CSV text, PNG and BMP images and MATLAB binary files.
Drivers and examples are included for LabVIEW, C/C++, Delphi and VB for integration into custom applications.

	2204	2205	2206	2207	2208
Bandwidth	10MHz	25MHz	50MHz	100MHz	200MHz
Sample Rate	100MSPS	200MSPS	500MSPS	1GSPS	1GSPS
Rise Time	35ns	14ns	7ns	3.5ns	1.75ns
Memory	8kS	16kS	24kS	32kS	40kS
EXT Trigger	No	No	Yes	Yes	Yes

Description	Mftrs. List No.	Order Code	Price Each 1+
PicoScope 2204	PICOSCOPE 2204	147-1476	159.00
PicoScope 2205	PICOSCOPE 2205	147-1477	249.00
PicoScope 2206	PICOSCOPE 2206	NEW 206-9951	349.00
PicoScope 2207	PICOSCOPE 2207	NEW 206-9952	449.00
PicoScope 2208	PICOSCOPE 2208	NEW 206-9953	599.00
Accessories			
60MHz Probes (Pk 2)	PP787	NEW 206-9954	30.00
150MHz Probes (Pk 2)	PP821	NEW 206-9955	40.00
250MHz Probes (Pk 2)	PP822	NEW 206-9958	50.00

PicoScope 3000 Series USB Oscilloscopes

USB3.0 now available on latest models

NEW

The PicoScope 3000 Series offer the highest performance USB powered oscilloscopes available. These oscilloscopes have 8 bit resolution and are accurate to within 3%. This combined with their large memory, high sampling rates and high bandwidths make them ideal for use in all areas of test and measurement from manufacturing and repair, to research and development.

The PicoScope 3207A and B are the world's first PC oscilloscopes with a USB 3.0 interface. USB 3.0 offers a tenfold increase in theoretical transfer speeds over USB 2.0. PicoScope USB 2.0 deep-memory oscilloscopes are already optimized to transfer data efficiently, but USB 3.0 has the potential to make this process even faster. On many USB 3.0 systems, performance will depend on your PC's CPU and chipset rather than being limited by the USB port.

USB 3.0 has some immediate benefits: if your PC has a fast SSD drive, the saving of large waveforms will be quicker. Another benefit is faster gap free continuous streaming of data to the PC. As CPU speeds continue to increase, the full performance benefits of USB 3.0 for oscilloscopes wil be realised.

- 2 or 4 channels
- Accurate 8 bit resolution inputs
- 60, 100 and 200 MHz bandwidth models
- I^2C, SPI, RS232/UART,CAN, LIN (4 channels only) and FlexRay (4 channels only) protocols
- Serial decoding
- Up to 10 GS/s repetitive sampling
- USB 2.0 or 3.0 connection and power

Kit Contents (2 channels): PicoScope oscilloscope, 2 x probes, USB cable, Quick Start Guide, Software and Reference CD.

Kit Contents (4 channels): PicoScope oscilloscope, 4 x probes, Single and double headed USB cables, Quick Start Guide, Software and Reference CD and AC power adapter.

Kit Contents (MSO Models): PicoScope oscilloscope, 2 probes in probe case, digital cable and 10 test clips

4 Channels	3404A	3404B	3405A	3405B	3406A	3406B
2 Channels	3204A	3204B	3205A	3205B	3206A	3206B
Resolution	8 bits					
Bandwidth	60 MHz	60 MHz	100 MHz	100 MHz	200 MHz	200 MHz
Real-time sampling rate	500MS/s	1 GS/s	500MS/s	1 GS/s	500MS/s	1 GS/s
Buffer memory (A model)	4 MS	4 MS	16 MS	16 MS	64 MS	64 MS
Buffer memory (B model)	8 MS	8 MS	32 MS	32 MS	128 MS	128 MS
Voltage ranges	±50 mV to ±20 V					
Timebase ranges	2 ns/div to 200 s/div		1 ns/div to 200 s/div		500 ps/div to 200 s/div	
Timebase accuracy	±50 ppm					
Trigger modes	Auto, repeat, single, none, rapid (segmented memory)					
Display mode	Magnitude, average, peak hold					
AWG buffer size	N/A	8 kS	N/A	8 kS	N/A	16 kS
AWG sample rate	N/A	20 MS/s	N/A	20 MS/s	N/A	20 MS/s
Frequency range	DC to 60 MHz		DC to 100 MHz		DC to 200 MHz	

Model	3204 MSO	3205 MSO	3206 MSO
Resolution	8 bits		
No. Of Channels	2		
Bandwidth	60 MHz	100 MHz	200 MHz
Real-time sampling rate	500MS/s		
Buffer memory	8 MS	32 MS	128 MS
Input characteristics	1 MΩ ±1%, in parallel with 13 pF ±1 pF		
Voltage ranges	±50 mV to ±20 V		
Timebase ranges	2 ns/div to 1000 s/div	1 ns/div to 1000 s/div	500 ps/div to 1000 s/div
Timebase accuracy	±50 ppm		
Trigger modes	Auto, repeat, single, none, rapid (segmented memory)		
Display mode	Magnitude, average, peak hold		
AWG buffer size	8 kS	8 kS	16 kS
AWG Update Rate	20 MS/s		
Frequency range	DC to 60 MHz	DC to 100 MHz	DC to 200 MHz
Dimensions (2 channel)	210 x 140 x 40 mm (including connectors)		
PC connection	USB 2.0 hi-speed (USB 1.1 and USB 3.0 compatible)		

	3207A	3207B
Channels	2 Analogue + 16 Digital	
Resolution	8 bits	
Bandwidth	250 MHz	
Real-time sampling rate	1 GS/s	
Buffer memory (A model)	256 MS	512 MS
Voltage ranges	±50 mV to ±20 V	
Timebase ranges	100 ps/div to 1000 s/div	
Timebase accuracy	±2 ppm ±1 ppm/year	
Trigger modes	Auto, repeat, single, none, rapid (segmented memory)	
Display mode	Magnitude, average, peak hold	
AWG buffer size	N/A	32 kS
Frequency range	DC to 250MHz	

List No.	Mftrs. Bandwidth	Channels	Order Code	Price Each 1+
Scope + Function Generator				
PICOSCOPE 3204A	60MHz	2	188-7207	399.00
PICOSCOPE 3404A	60MHz	4	NEW 211-8833	599.00
PICOSCOPE 3205A	100MHz	2	188-7211	599.00
PICOSCOPE 3405A	100MHz	4	NEW 211-8835	899.00
PICOSCOPE 3206A	200MHz	2	188-7213	799.00
PICOSCOPE 3406A	200MHz	4	NEW 211-8837	1,199.00
Scope + Function Generator and AWG				
PICOSCOPE 3204B	60MHz	2	188-7209	499.00
PICOSCOPE 3404B	60MHz	4	NEW 211-8834	749.00
PICOSCOPE 3205B	100MHz	2	188-7212	699.00
PICOSCOPE 3405B	100MHz	4	NEW 211-8836	1,049.00
PICOSCOPE 3206B	200MHz	2	188-7214	899.00
PICOSCOPE 3406B	200MHz	4	NEW 211-8838	1,349.00
MSO Scope + Function Generator + AWG				
PICOSCOPE 3204 MSO	60MHz	2 + 16	NEW 227-9943	649.00
PICOSCOPE 3205 MSO	100MHz	2 + 16	NEW 227-9944	849.00
PICOSCOPE 3206 MSO	200MHz	2 + 16	NEW 227-9945	1,049.00
USB 3.0 Oscilloscopes + AWG				
PICOSCOPE 3207A	250MHz	2 + 16	NEW 229-3346	1,099.00
PICOSCOPE 3207B	250MHz	2 + 16	NEW 229-3347	1,199.00
2293347				
Carrying Case			188-7215	30.00

PicoScope 6000 Series

NEW

CALIBRATION SERVICES

- 5 GS/s real-time sample rate
- Up to 500 MHz analog bandwidth
- 8-bit vertical resolution
- 4 channels
- Up to 1 gigasample buffer memory
- Hi-speed USB 2.0
- Built-in arbitrary waveform generator and spectrum analyser
- Serial decoding (CAN, I2C, SPI, UART) and mask limit testing built-in
- Supports Windows XP, Windows Vista and Windows 7 (32 and 64-bit)

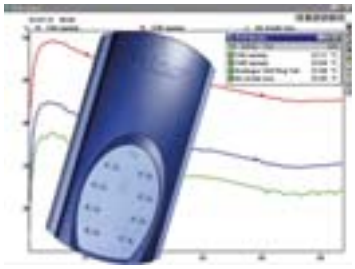
Model	6402A	6402B	6403A	6403B	6404A	6404B
Number of channels	4					
ADC resolution	8 Bits					
Bandwidth	250 MHz		35 0MHz		500 MHz	
Real-time sampling rate	5 GS/s (1 channel), 2.5 GS/s (2 channels), 1.25 GS/s (3 or 4 channels)					
Buffer size	128 MS	256 MS	256 MS	512 MS	512 MS	1 GS
Input impedance	1M // 15pF, or 50Ω				1M // 10pF, 50Ω	
Voltage ranges	±50mV to ±20V (up to ±5V when 50Ω input selected)					
Timebase ranges	10 ns/div to 1000 s/div					
Timebase accuracy	5 ppm					
Trigger modes	None, Single, Repeat, Auto, Rapid, ETS					
Data formats	CAN, LIN, I^2C, UART/RS-232, SPI					
Display modes	Magnitude, average, peak hold					
Generator waveforms range	DC to 20 MHz					
Generator waveforms (A models)	Sine, square, triangle, DC					
Generator waveforms (B models)	As A models plus ramp, sin (x)/x, Gaussian, half-sine, white noise, PRBS					
AWG buffer size	N/A	16 ks	N/A	16 ks	N/A	16 ks
AWG sample rate	N/A	200 MS/s	N/A	200 MS/s	N/A	200 MS/s
Frequency range	DC to 250 MHz		DC to 350 MHz		DC to 500 MHz	
Dimensions	255x170x40mm				280x170x40mm	
PC connection	USB 2.0 (USB 1.1 compatible)					

Kit contents: Oscilloscope, Four probes, USB cable, Universal mains (AC) power supply, Mains lead (power cord), Installation Guide, Software and Reference CD and Carrying case.

List No.	Mftrs. Bandwidth	Order Code	Price Each 1+
Standard			
PICOSCOPE 6402A	250MHz	211-5766	1,995.00
PICOSCOPE 6403A	350MHz	211-5768	2,995.00
PICOSCOPE 6404A	500MHz	211-5770	3,995.00
Built-in AWG Editor			
PICOSCOPE 6402B	250MHz	211-5767	2,495.00
PICOSCOPE 6403B	350MHz	211-5769	3,495.00
PICOSCOPE 6404B	500MHz	211-5771	4,495.00

Temperature Datalogger

USB TC-08



GREAT SELLER

- Measures and records up to 8 thermocouples
- Works with all popukar thermocouple types
- High resolution and accuracy
- Wide temperature range (-270°C to 1800°C)
- Multiple units can be used on the same PC if more than 8 channels are required
- No power supply required
- Built in cold junction compensation
- Supplied with PicoLog data logging software
- USB interface ensures easy installation
- Supports Windows XP, Vista and 7.

An 8 channel, PC based temperature data logger with USB interface. It can measure temperatures from -270°C to +1800°C and works with all popular types of thermocouple (B, E, J, K, N, R, S, T). There is also a 60mV range that can be used for other types of sensor. Supplied with PicoLog software for handling and analysis of all data.

Number of channels	8
Accuracy	±(0.3%+0.5°C)
Overload Potection	±10V
Conversion time	200ms for cold junction compensation + 200ms per active channel
Input connectors	Miniature thermocouple
Common mode voltage	±5V max
Output connector	USB1.1 connector cable supplied
Dimensions (WxDxH)	85 x 145 x 25mm

Mftrs. List No.	Order Code	Price Each 1+
TC08 USB	**782-0178**	249.00

25 - 60 Watt Single Output Industrial and Medical PSUs

Ultra Compact Design

- IT & Medical 3rd Edition Safety Approvals
- 2 x MOPP with Risk Management File
- Very Small 3" x 2" x 0.95" Package
- <0.3 W No Load Input Power
- 25, 45 & 60 W - Convection Cooled
- Class I & Class II Installations
- 3 Year Warranty

ECS25: H=24.2, W=76.2, D=50.8mm
ECS45 (5V): H=26.7, W=76.2, D=50.8mm
ECS45 (12V to 48V): H=24.2, W=76.2, D=50.8mm
ECS60: H=26.7, W=76.2, D=50.8mm
ECS25-60 Cover: H=35.6, W=88.4, D=64mm

Input Voltage	80-264 VAC, Derate from 100% @ 90 VAC to 80% @ 80 VAC
Input Frequency	47-400Hz. (Safety approval covers the range 47-63Hz)
No Load Input Power	US05, 12 & 24 models: <0.3W US48 and all ECS60 models: <0.5W
Efficiency	Up to 90%
Isolation	Input to output: 2 x MOPP Input to ground: 1 x MOPP
Line Regulation	±0.5% max.
Load Regulation	±1%
Ripple & Noise	1% pk-pk V1, 20 MHz BW
Operating Temperature	-20°C to +70°C, derate linearly from +50°C at 2.5% / °C to 50% load at +70°C
Emissions	EN55022 level B conducted, EN55022 level A radiated, ECS25 level B radiated
Safety Approvals	IEC60950-1, UL60950-1, EN60950-1, IEC60601-1, ANSI/AAMI ES60601-1, EN60601-1, Including Risk Management

Mftrs. List No.	Output Voltage	Output Current	Power	Order Code
ECS25US12	12V	2.08A	25W	182-1517
ECS25US15	15V	1.67A	25W	182-1518
ECS25US24	24V	1.04A	25W	182-1521
ECS25US48	48V	520mA	25W	182-1522
ECS45US05	5V	6A	30W	182-1524
ECS45US12	12V	3.75A	45W	182-1525
ECS45US15	15V	3A	45W	182-1526
ECS45US24	24V	1.9A	45W	182-1527
ECS45US48	48V	950mA	45W	182-1528
ECS60US05	5V	8A	40W	209-9498
ECS60US12	12V	5A	60W	186-0930
ECS60US15	15V	4A	60W	186-0931
ECS60US24	24V	2.5A	60W	186-0932
ECS60US48	48V	1.25A	60W	186-0933

	Order Code	Price Each 1+	5+	10+	25+
ECS25US	**All Order Codes**	20.00	19.40	18.80	18.00
ECS45US	**All Order Codes**	25.00	24.25	23.50	22.50
ECS60US	**All Order Codes**	35.00	33.95	32.90	31.50
Accessories					
ECS25-60 Cover Kit	**182-1523**	7.00	6.79	6.58	6.30

65 Watt Single Output PSUs

Green Energy Design

- IT & 3rd Edition Medical Safety Approvals
- 2 x MOPP with Risk Management File
- <0.5 W No Load Input Power
- 65 W - Convection Cooled
- Industry Standard 2" x 4" Package
- Class I & Class II Construction
- 3 Year Warranty

Dimensions: H=26.7, W=101.6, D=50.8mm

Input Voltage	80-275 VAC (120-370 VDC)
Input Frequency	47-400Hz (safety approved covers the range 47-63Hz)
Line Regulation	±0.5% max.
Load Regulation	±1%
No Load Input Power	<0.5W
Isolation	Input to output: 2 x MOPP Input to ground: 1 x MOPP
Ripple & Noise	1% pk-pk, 20MHz BW
Efficiency	Up to 90%
Operating Temperature	-20°C to +70°C derate linearly from +50°C at 2.5%/°C to 50% load at +70°C
Cooling	Convection
Emissions	EN55022, Level B conducted. EN55022, Level A radiated.
Safety Approvals	IEC60950-1, CSA 22.2 No. 60950-1, UL60950-1, EN60950-1, IEC60601-1, CSA 22.2 No. 60601-1, ANSI/AMMI ES60601-1, EN60601-1, Including Risk Management File

Mftrs. List No.	Power	Output Voltage	Current	Order Code
ECS65US12	65W	12V	5.4A	182-1421
ECS65US15	65W	15V	4.3A	182-1422
ECS65US18	65W	18.5V	3.4A	209-9499
ECS65US24	65W	24V	2.7A	182-1423
ECS65US28	65W	28V	2.3A	182-1424
ECS65US48	65W	48V	1.4A	182-1425

	Order Code	Price Each 1+	5+	10+	25+
ECS65 Series	**All Order Codes**	32.00	31.04	30.08	28.80
Accessories					
ECM40/60 Cover	**117-6953**	10.25	9.94	9.63	9.22

5 and 10 Watt Single Output PCB Mount

Miniature AC/DC Power Supplies

NEW

- Ultra Compact Size, from 1"x1"
- Single Outputs from 3.3 to 48 V
- Encapsulated PCB Mount
- Class II Construction
- <0.3 W No Load Input Power
- Peak Load Capability
- 3 Year Warranty

ECE05 (mm): H=15.24, W=25.4, D=25.4
ECE10 (mm): H=15.24, W=25.4, D=38.1

Input Voltage	85-264V AC, (120-370V DC)
Input Frequency	47-63Hz
Line Regulation	±0.5% max.
Load Regulation	±1% max.
No Load Input Power	<0.3W
Efficiency	Up to 86%
Ripple & Noise	3.3-5 V versions: 60 mV pk-pk, all other models 1% pk-pk max 20 MHz bandwidth
Operating Temperature	-25°C to +70°C, derate linearly from 100% at +50°C to 50% at +70°C
Safety Approvals	EN60950-1, UL60950-1, CSA22.2 No. 234 per cUL
Emissions	EN55022, level B conducted & radiated

Mftrs. List No.	Output Voltage	Output* Current	Output Power	Order Code
ECE05US03	3.3V	1.51A	5W	209-9446
ECE05US05	5V	1A	5W	209-9447
ECE05US09	9V	550mA	5W	209-9448
ECE05US12	12V	410mA	5W	209-9449
ECE05US15	15V	330mA	5W	209-9450
ECE05US24	24V	210mA	5W	209-9451
ECE05US48	48V	100mA	5W	209-9452
ECE10US03	3.3V	2.6A	10W	209-9453
ECE10US05	5V	2A	10W	209-9454
ECE10US09	9V	1.11A	10W	209-9455
ECE10US12	12V	830mA	10W	209-9456
ECE10US15	15V	660mA	10W	209-9458
ECE10US24	24V	410mA	10W	209-9459
ECE10US48	48V	210mA	10W	209-9460

*Peak load capability, refer to the datasheet

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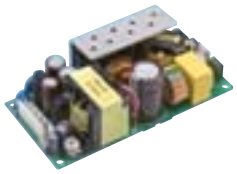
Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	100+
ECE05US03	209-9446	14.00	13.58	13.16	12.60	11.90
ECE05US05	209-9447	14.00	13.58	13.16	12.60	11.90
ECE05US09	209-9448	14.00	13.58	13.16	12.60	11.90
ECE05US12	209-9449	14.00	13.58	13.16	12.60	11.90
ECE05US15	209-9450	14.00	13.58	13.16	12.60	11.90
ECE05US24	209-9451	14.00	13.58	13.16	12.60	11.90
ECE05US48	209-9452	14.00	13.58	13.16	12.60	11.90
ECE10US03	209-9453	18.00	17.46	16.92	16.20	15.30
ECE10US05	209-9454	18.00	17.46	16.92	16.20	15.30
ECE10US09	209-9455	18.00	17.46	16.92	16.20	15.30
ECE10US12	209-9456	18.00	17.46	16.92	16.20	15.30
ECE10US15	209-9458	18.00	17.46	16.92	16.20	15.30
ECE10US24	209-9459	18.00	17.46	16.92	16.20	15.30
ECE10US48	209-9460	18.00	17.46	16.92	16.20	15.30

150 Watt Single Output PSUs

Ultra Compact Design



- IT & Medical 3rd Edition Safety Approvals
- 2 x MOPP
- 100 W Convection, 150 W Force-cooled Ratings
- Built-in Fan Supply
- <0.5 W No Load Input Power
- 2" x 4" Foot Print
- Fits 1U Applications
- 3 Year Warranty

Dimensions: H=33.6, W=101.6, D=50.8mm

Input Voltage	90-264 VAC
Input Frequency	47 - 63 Hz
Line Regulation	±0.5% max.
Load Regulation	±0.5% max.
No Load Input Power	<0.5W
Efficiency	Up to 92%
Isolation	Input to Output: 2 x MOPP Input to Ground: 1 x MOPP
Ripple & Noise	1% max. pk-pk, 20 MHz BW
Operating Temperature	-20°C to +70°C, derate from 100% load at 50°C to 50% load at 70°C
Safety Approvals	UL60950-1, IEC60950-1, EN60950-1, ANSI/AAMI ES60601-1, IEC60601-1, EN60601-1
Emissions	EN55022, Level B conducted & Level A radiated

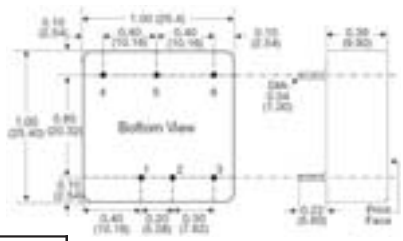
Mftrs. List No.	Output Voltage	Output Current Convection Cooled	Force Cooled	Fan Output	Order Code
ECP150PS12	12V	8.33A	12.5A	12V / 0.5A	182-1473
ECP150PS15	15V	6.67A	10.0A	12V / 0.5A	182-1474
ECP150PS24	24V	4.17A	6.25A	12V / 0.5A	182-1475
ECP150PS28	28V	3.5A	5.40A	12V / 0.5A	182-1476
ECP150PS48	48V	2.08A	3.10A	12V / 0.5A	182-1478

	Order Code	Price Each 1+	5+	10+	25+
ECP150 Series	All Order Codes	73.00	70.81	68.62	65.70

15-20 Watt Single and Dual Output DC/DC Converters

Ultra Compact Package

Dimensions(mm): H=9.9, W=25.4, D=25.4



PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

- Wide 4:1 Input Range
- High Power Density - 1"x1" Package
- Operating Temperature -40°C to +100°C
- Single & Dual Outputs
- 1600 VDC Isolation
- High Efficiency - up to 89%
- 3 Year Warranty

Input Voltage Range	24 V (9-36 VDC), 48 V (18-75 VDC)
Line Regulation	JTK15: ±0.2% max, JTK20: ±0.5% max
Load Regulation	±0.5% max for single, ±1% max for dual
Ripple & Noise	100mV pk-pk, 20 MHz bandwidth
Isolation Voltage	1600 VDC Input to Output, 1600 VDC Input to Case, 1600 VDC Output to Case
Operating Temperature	-40°C to +100°C, JTK15: derate from 100% load at +65°C to no load at +100°C, JTK20: derate from 100% load at +55°C to no load at +100°C
Short Circuit Protection	Trip & restart (hiccup) with auto recovery
MTBF	>560 kHrs to MIL-HDBK-217F at 25°C, GB

Mftrs. List No.	Input Voltage	Output 1	Output 2	Order Code
JTK1524S3V3	9V to 36V	3.3V, 4A	–	173-8204
JTK1524S05	9V to 36V	5V, 3A	–	173-8205
JTK1524S12	9V to 36V	12V, 1.3A	–	173-8206
JTK1524S15	9V to 36V	15V, 1A	–	173-8207
JTK1524D05	9V to 36V	5V, 1.5A	-5V, -1.5A	173-8208
JTK1524D12	9V to 36V	12V, 625mA	-12V, -625mA	173-8209
JTK1524D15	9V to 36V	15V, 500mA	-15V, -500mA	173-8210
JTK1548S3V3	18V to 75V	3.3V, 4A	–	173-8211
JTK1548S05	18V to 75V	5V, 3A	–	173-8212
JTK1548S12	18V to 75V	12V, 1.3A	–	173-8213
JTK1548S15	18V to 75V	15V, 1A	–	173-8214
JTK1548D05	18V to 75V	5V, 1.5A	-5V, -1.5A	173-8216
JTK1548D12	18V to 75V	12V, 625mA	-12V, -625mA	173-8217
JTK1548D15	18V to 75V	15V, 500mA	-15V, -500mA	173-8218
JTK2024S3V3	9V to 36V	3.3V, 4.5A	–	186-1077
JTK2024S05	9V to 36V	5V, 4A	–	186-1073
JTK2024S12	9V to 36V	12V, 1.67A	–	186-1075
JTK2024S15	9V to 36V	15V, 1.33A	–	186-1076
JTK2024D12	9V to 36V	12V, 833mA	-12V, -833mA	186-1071
JTK2024D15	9V to 36V	15V, 667mA	-15V, -667mA	186-1072
JTK2048S3V3	18V to 75V	3.3V, 4.5A	–	186-1083
JTK2048S05	18V to 75V	5V, 4A	–	186-1080
JTK2048S12	18V to 75V	12V, 1.67A	–	186-1081
JTK2048S15	18V to 75V	15V, 1.33A	–	186-1082
JTK2048D12	18V to 75V	12V, 833mA	-12V, -833mA	186-1078
JTK2048D15	18V to 75V	15V, 667mA	-15V, -667mA	186-1079

	Order Code	Price Each 1+	5+	10+	25+
JTK15 Single	All Order Codes	31.00	30.07	29.14	27.90
JTK15 Dual	All Order Codes	33.00	32.01	31.02	29.70
JTK20 Single	All Order Codes	39.00	37.83	36.66	35.10
JTK20 Dual	All Order Codes	41.00	39.77	38.54	36.90

7-30 Watt AC/DC Encapsulated Modules

- Fully encapsulated low profile plastic case
- 2 versions available:
- - for PCB mount with solder pins
- - for chassis mount with screw terminal block
- Single-, Dual- and Triple output models
- Universal input 85-264 VAC, 47-440 Hz
- Safety class II
- 3 years warranty
- Short circuit and overload protection

Line Regulation	1.0 % max.
Load Regulation	1.0 % typ. output 1 3.0 % typ. output 2&3
Ripple & noise	< 1.8% of Vout [mvpk-pk max.] for 3.3 & 5.0 VDC outputs < 1.3% of Vout [mvpk-pk max.] for other outputs
EMI Suppression	EN 55011, class B, EN 55022, class B and FCC, level B
EMI Immunity	EN 61000-6-2
Output Current Limitation	> 105% of Inorm, foldback, automatic recovery
Safety Approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Operating Temperature	-25°C to +70°C, above 50°C derating 3.5 %/K
Efficiency	83% typ.
Case	Plastic (UL94V-0)

Mftrs.* List No.	Output Power	Output 1	Output 2	Output 3	Order Code PCB Mount	Chassis Mount
TMP 07105	7W	5V, 1.4A	–	–	167-2132	–
TMP 07112	7W	12V, 585mA	–	–	167-2133	–
TMP 07124	7W	24V, 290mA	–	–	167-2134	–
TMP 10105	10W	5V, 2A	–	–	167-2135	–
TMP 10112	10W	12V, 830mA	–	–	167-2136	–
TMP 10124	10W	24V, 415mA	–	–	167-2138	–
TMP 10212	10W	12V, 380mA	12V, 380mA	-12V, -380mA	167-2139	–
TMP 10215	10W	15V, 300mA	15V, 300mA	-15V, -300mA	167-2140	–
TMP 15105	15W	5V, 3A	–	–	167-2141	167-2159
TMP 15112	15W	12V, 1.25A	–	–	167-2142	167-2160
TMP 15124	15W	24V, 625mA	–	–	167-2143	167-2161
TMP 15148	15W	48V, 310mA	–	–	167-2144	167-2163
TMP 15212	15W	12V, 650mA	12V, 650mA	-12V, -650mA	167-2145	167-2164
TMP 15215	15W	15V, 500mA	15V, 500mA	-15V, -500mA	167-2146	167-2165
TMP 15512	15W	5V, 2A	12V, 200mA	-12V, 200mA	167-2147	167-2166
TMP 15515	15W	5V, 2A	15V, 150mA	-15V, 150mA	167-2148	167-2167
TMP 30105	30W	5V, 6A	–	–	167-2151	167-2168
TMP 30112	30W	12V, 2.5A	–	–	167-2152	167-2169
TMP 30124	30W	24V, 1.25A	–	–	167-2153	167-2170
TMP 30148	30W	48V, 625mA	–	–		167-2171
TMP 30212	30W	12V, 1.3A	-12V, 1.3A	–	167-2155	167-2172
TMP 30215	30W	15V, 1A	-15V, 1A	–	167-2156	167-2173
TMP 30512	30W	5V, 3A	12V, 600mA	-12V, 600mA	167-2157	167-2175
TMP 30515	30W	5V, 3A	15V, 500mA	-15V, -500mA	167-2158	167-2177
TMPM 04105	4W	5V, 800mA	–	–	208-0706	–
TMPM 04112	4W	12V, 333mA	–	–	208-0707	–
TMPM 04124	4W	24V, 167mA	–	–	208-0708	–
TMPM 10105	10W	5V, 2A	–	–	177-2175	–
TMPM 10112	10W	12V, 830mA	–	–	177-2176	–
TMPM 10115	10W	15V, 665mA	–	–	177-2177	–
TMPM 10124	10W	24V, 415mA	–	–	177-2178	–

*Add C to the end fo the mftrs. list no. for chassis mount versions.

Continues on next page

Type	PCB Mount			Chassis Mount		
	Length (mm)	Width (mm)	Height (mm)	Length (mm)	Width (mm)	Height (mm)
TMPM 04xxx	36.5	27	17.1			
TMP 07xxx	50.8	25.4	19.3			
TMPM 10xxx	52.4	27.2	23.5			
TMP 10xxx	64	45	19			
TMP 15xxx	74	54	19.3	96	54	23.3
TMP 30xxx	89	63.5	21.5	112	63.8	25.6

DIN Rail Mounting Kit

Mftrs. List No.	For Use With	Order Code
TMP-MK 1	TMP 15xxxC	208-0711
TMP-MK 2	TMP 30xxxC & TMP 60xxxC	208-0712

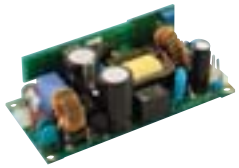
Contents: Interface plate, DIN Rail clip and Screws.

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
TMP 07105	**167-2132**	27.40	26.58	25.79
TMP 07112	**167-2133**	27.40	26.58	25.79
TMP 07124	**167-2134**	27.40	26.58	25.79
TMP 10105	**167-2135**	29.00	28.13	27.29
TMP 10112	**167-2136**	29.00	28.13	27.29
TMP 10124	**167-2138**	29.00	28.13	27.29
TMP 10212	**167-2139**	30.40	29.49	28.61
TMP 10215	**167-2140**	30.40	29.49	28.61
TMP 15105	**167-2141**	30.80	29.88	28.98
TMP 15112	**167-2142**	30.80	29.88	28.98
TMP 15124	**167-2143**	30.80	29.88	28.98
TMP 15148	**167-2144**	30.80	29.88	28.98
TMP 15212	**167-2145**	32.20	31.23	30.30
TMP 15215	**167-2146**	32.20	31.23	30.30
TMP 15512	**167-2147**	36.90	35.80	34.72
TMP 15515	**167-2148**	36.90	35.80	34.72
TMP 30105	**167-2151**	46.30	44.91	43.56
TMP 30112	**167-2152**	46.30	44.91	43.56
TMP 30124	**167-2153**	46.30	44.91	43.56
TMP 30212	**167-2155**	48.30	46.85	45.45
TMP 30215	**167-2156**	48.30	46.85	45.45
TMP 30512	**167-2157**	56.90	55.20	53.53
TMP 30515	**167-2158**	56.90	55.20	53.53
TMP 15105C	**167-2159**	37.80	36.67	35.56
TMP 15112C	**167-2160**	37.80	36.67	35.56
TMP 15124C	**167-2161**	37.80	36.67	35.56
TMP 15148C	**167-2163**	37.80	36.67	35.56
TMP 15212C	**167-2164**	39.30	38.13	36.98
TMP 15215C	**167-2165**	39.30	38.13	36.98
TMP 15512C	**167-2166**	43.80	42.49	41.21
TMP 15515C	**167-2167**	43.80	42.49	41.21
TMP 30105C	**167-2168**	53.50	51.89	50.34
TMP 30112C	**167-2169**	53.50	51.89	50.34
TMP 30124C	**167-2170**	53.50	51.89	50.34
TMP 30148C	**167-2171**	53.50	51.89	50.34
TMP 30212C	**167-2172**	56.10	54.41	52.79
TMP 30215C	**167-2173**	56.10	54.41	52.79
TMP 30512C	**167-2175**	64.70	62.76	60.88
TMP 30515C	**167-2177**	64.70	62.76	60.88
TMPM 04105	**208-0706**	12.78	12.27	11.78
TMPM 04112	**208-0707**	12.78	12.27	11.78
TMPM 04124	**208-0708**	12.78	12.27	11.78
TMPM 10105	**177-2175**	27.50	26.68	25.88
TMPM 10112	**177-2176**	27.50	26.68	25.88
TMPM 10115	**177-2177**	27.50	26.68	25.88
TMPM 10124	**177-2178**	27.50	26.67	25.88
Accessories				
TMP-MK 1	**208-0711**	6.50	6.24	5.99
TMP-MK 2	**208-0712**	9.10	8.74	8.39

TOP 100 Series

TRACO POWER

100 Watt, power supplies, open frame



- First 100 W power supply in 2.0"x4.0" footprint!
- Connection with connector (Molex)
- Universal input 90-132 / 187-264 VAC, auto range
- Safety class II
- Over voltage-, short circuit and over load protection
- 3 Year product warranty

Further Specifications:

Regulation:	
Input variation:	±1% max.
Load variation:	±1% max.
Ripple & Noise:	100mV pk-pk typ. (20 MHz Bandwidth)
EMI suppression:	EN 55022, class B
EMC immunity:	EN 61000-3-2
Overload protection by:	> 150% Iout max., Fold back, automatic recovery
Safety standards/approvals:	IEC / EN 60950-1, UL 60950-1, CSA-C22.2 Nr. 60950-1-03 (in prep.)
Operating temperature range:	-25°C to +70°C; above 50°C derating
Efficiency:	90% typ.

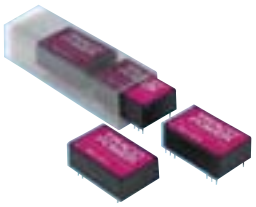
Mftrs List No	Ouput Voltage (V DC)	Output Current max. (A)	Order Code
TOP 100-105	5-5.2	20	144-1235
TOP 100-112	12-13.0	8.3	144-1236
TOP 100-124	24-26.0	4.2	144-1237
TOP 100-148	48-52.0	2.1	144-1238

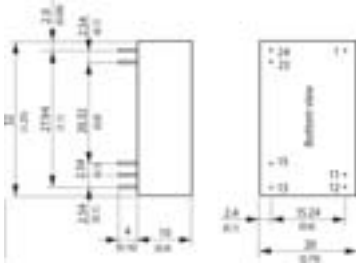
Mftrs List No	Order Code	Price Each 1+	5+	10+	25+
TOP 100-105	**144-1235**	57.50	55.78	54.10	52.49
TOP 100-112	**144-1236**	54.00	52.39	50.81	49.29
TOP 100-124	**144-1237**	52.50	50.92	49.40	47.91
TOP 100-148	**144-1238**	54.00	52.39	50.81	49.29

THB 3 Series

TRACO POWER

3 Watt, reinforced insulation





- Wide 2:1 Input voltage ranges
- I/O Isolation 4000 VAC
- Reinforced insulation rated for 300 VAC/420 VDC working voltage
- Complies with industrial and medical safety standards
- Input filter to meet EN 55022, class A and FCC, level A without external components
- Short circuit protection
- 3 Year product warranty

Further specifications:

Regulation:	
Input variation:	±1.0% max.
Load variation:	±0.75% max.
Ripple & Noise:	100mV pk-pk typ. (20 MHz Bandwidth)
I/O Isolation:	4kV (60 sec., 50 Hz)
Operating temperature range:	-40°C to +71°C; above 70°C derating 3,5% / K
Safety standards/-approvals:	cUL/UL 60950-1, IEC/EN 60950-1, EN 50124-1&2, IEC/EN/UL 60601-1, CSA C22.2 Nr. 601-1 (rated for 300 VAC/420 VDC working voltage)

Mftrs List No	Input Voltage V DC	Output Voltage V DC	Output Current max. mA	Efficiency (%)	Order Code
THB 3-0511	4.5 - 6	5	600	70	144-1203
THB 3-0515		24	125	76	144-1205
THB 3-0523		±15	±100	75	144-1208
THB 3-1211	9 - 18	5	600	74	144-1209
THB 3-1212		12	250	80	144-1210
THB 3-1215		24	125	81	144-1211
THB 3-1222		±12	±125	80	144-1212
THB 3-1223		±15	±100	80	144-1213
THB 3-2411	18 - 36	5	600	78	144-1214
THB 3-2412		12	250	83	144-1215
THB 3-2415		24	125	84	144-1216
THB 3-2423		±15	±100	83	144-1219

Pin-out Pin	Single	Dual	Pin-out 13	+Vout	-Vout
1	+Vin (Vcc)	+Vin (Vcc)	15	No Pin	+Vout
11	No Pin	Common	23	-Vin (GND)	-Vin (GND)
12	-Vout	No Pin	24	-Vin (GND)	-Vin (GND)

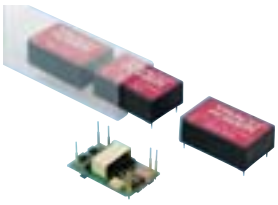
Mftrs List No	Order Code	Price Each 1+	5+	10+	25+
THB 3-0511	**144-1203**	31.10	30.16	29.27	28.38
THB 3-0515	**144-1205**	31.10	30.16	29.27	28.38
THB 3-0523	**144-1208**	32.65	31.75	30.89	30.03
THB 3-1211	**144-1209**	31.10	30.16	29.27	28.38
THB 3-1212	**144-1210**	31.10	30.16	29.27	28.38
THB 3-1215	**144-1211**	31.10	30.16	29.27	28.38
THB 3-1222	**144-1212**	32.65	31.78	30.90	30.06
THB 3-1223	**144-1213**	32.65	31.67	30.72	29.80
THB 3-2411	**144-1214**	31.10	30.16	29.27	28.38
THB 3-2412	**144-1215**	31.10	30.16	29.27	28.38
THB 3-2415	**144-1216**	31.10	30.16	29.27	28.38
THB 3-2423	**144-1219**	32.65	31.67	30.72	29.80

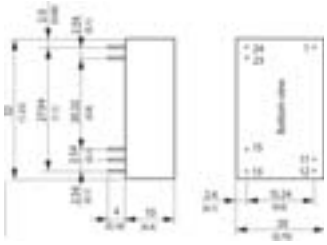
TROUBLESHOOTING TIPS
Chat online to one of our technical engineers at **farnell.com**

THP 3 Series DC/DC Conductor

TRACO POWER

3 Watt, High Isolation





- Ultra wide 4:1 input ranges
- Input voltages up to 160 V dc
- I/O Isolation 4000 V ac
- Basic, supplementary and reinforced insulation for working voltages up to 420V dc / 300V ac
- Safety standards for the medical and railway industries
- Clearance and creeping distances min. 2.0mm
- Plastic package
- Input filter meets EN 55022, Class A and FCC, Level A without external components
- Continuous short circuit protection
- Safety standards: cUL/UL 60950, IEC/EN 60950, EN 50124-1&2, IEC/EN/UL 60601-1, CSA C22.2 (covering 300 V ac/420 V dc working voltages)
- 3 year product warranty

Further specifications:

Regulation:	
Input variation	±0.5%5% max.
Load variation	±1.0% max.
Ripple and noise:	100mV pk-pk typ. (20 MHz Bandwidth)
I/O Isolation:	4kV eff. (60 sec., 50 Hz)
Operating temperature:	-40°C to +85°C; above 75°C power reduction 4% / K

Mftrs. List No.	Input Voltage	Output Voltage	Output Current (max.)	Efficiency typ. (%)	Order Code
	V dc	V dc	mA		
THP 3-2411	9 - 40	5	600	78	100-7498
THP 3-2412		12	250	83	100-7499
THP 3-2422		±12	±125	83	100-7500
THP 3-2423		±15	±100	83	100-7501
THP 3-4811	18 - 80	5	600	78	100-7502
THP 3-4812		12	250	83	100-7503
THP 3-7211	36 - 160	5	600	78	100-7507
THP 3-7212		12	250	83	100-7508
THP 3-7222		±12	±125	83	100-7509
THP 3-7223		±15	±100	83	100-7510

Pinout Pin	Single	Dual	Pinout 13	+Vout	-Vout
1	+Vin (Vcc)	+Vin (Vcc)	15	No Pin	+Vout
11	No Pin	Common	23	-Vin (GND)	-Vin (GND)
12	-Vout	No Pin	24	-Vin (GND)	-Vin (GND)

Price Each

Mftrs. List No.	Order Code	1+	5+	10+	25+
THP 3-2411	**100-7498**	44.40	43.07	41.78	40.52
THP 3-2412	**100-7499**	44.40	43.07	41.78	40.52
THP 3-2422	**100-7500**	47.10	45.68	44.32	42.99
THP 3-2423	**100-7501**	47.10	45.68	44.32	42.99
THP 3-4811	**100-7502**	44.40	43.07	41.78	40.52
THP 3-4812	**100-7503**	44.40	43.07	41.78	40.52
THP 3-7211	**100-7507**	44.40	43.07	41.78	40.52
THP 3-7212	**100-7508**	44.40	43.07	41.78	40.52
THP 3-7222	**100-7509**	47.10	45.68	44.32	42.99
THP 3-7223	**100-7510**	47.10	45.68	44.32	42.99

10 Watt Single Output Plug-In PSUs

multicomp

- Energy Star Level V
- CEC 2008 & EISA 2007 Compliant
- Output Voltages from 5 to 24 VDC
- No Load Input Power < 0.3 W
- Compact Dimensions
- UK & EU Plug Versions
- International Safety Approvals
- Output via 2.5mm plug

Input Voltage	90 - 264VAC
Input Frequency	47 - 63 Hz
Efficiency	76% typical
Ripple & Noise	1% pk-pk max, 20 MHz bandwidth
No Load Input Power	<0.3W
Operating Temperature	0°C to +40°C, no derating
Safety Approvals	EN60950-1:2001, CE Mark
Emissions	EN55022 Level B conducted & radiated

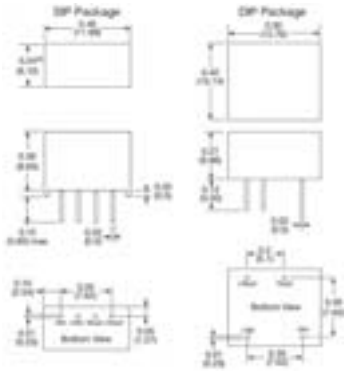
Mftrs. List No.	Output Power	Output Voltage	Output Current	Order Code
UK Plug				
MCPLG5V10WUK	8W	5V	1.6A	182-7440
MCPLG6V10WUK	8W	6V	1.33A	182-7441
MCPLG7V10WUK	8W	7V	1.14A	182-7442
MCPLG9V10WUK	10W	9V	1.11A	182-7444
MCPLG12V10WUK	10W	12V	830mA	182-7445
MCPLG24V10WUK	10W	24V	410mA	182-7446
EU Plug				
MCPLG5V10WEU	8W	5V	1.6A	182-7447
MCPLG6V10WEU	8W	6V	1.33A	182-7448
MCPLG7V10WEU	8W	7.5V	1.14A	182-7449
MCPLG9V10WEU	10W	9V	1.11A	182-7450
MCPLG12V10WEU	10W	12V	830mA	182-7451
MCPLG24V10WEU	10W	24V	410mA	182-7452

Price Each

Order Code	1+	5+	10+	25+
All Order Codes	11.00	10.67	10.34	9.90

1 Watt Single Output DC/DC Converters

multicomp



- Industry standard pinout
- 1000 VDC Isolation
- Short circuit protection
- Single Output
- SIP or DIP Package
- 40°C to +85°C Operation
- 2 Year Warranty

NEW

Input Range	Nominal ±10%
Line Regulation	1.2%/1% Δ Vin
Load Regulation	10% 20-100% load change
Ripple & Noise	100 mV pk-pk max, 20 MHz bandwidth
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +125°C
Isolation Voltage	1000 VDC

Input Voltage	Output Voltage	Output Current	SIP Package Order Code	DIP Package Order Code
5V	5V	200mA	207-9688	207-9687
5V	12V	84mA	207-9692	207-9691
5V	15V	66mA	207-9694	207-9693
12V	5V	200mA	207-9696	207-9695
12V	12V	84mA	207-9698	207-9697
12V	15V	66mA	207-9700	207-9699
24V	5V	200mA	207-9702	207-9701
24V	12V	84mA	207-9704	207-9703
24V	15V	66mA	207-9706	207-9705

Price Each

Mftrs. List No.	Order Code	1+	5+	10+	25+	100+
SIP Package						
MCE05S05S	**207-9688**	3.81	3.71	3.58	3.42	3.25
MCE05S12S	**207-9692**	3.81	3.71	3.58	3.42	3.25
MCE05S15S	**207-9694**	3.81	3.71	3.58	3.42	3.25
MCE12S05S	**207-9696**	3.81	3.71	3.58	3.42	3.25
MCE12S12S	**207-9698**	3.81	3.71	3.58	3.42	3.25
MCE12S15S	**207-9700**	3.81	3.71	3.58	3.42	3.25
MCE24S05S	**207-9702**	3.81	3.71	3.58	3.42	3.25
MCE24S12S	**207-9704**	3.81	3.71	3.58	3.42	3.25
MCE24S15S	**207-9706**	3.81	3.71	3.58	3.42	3.25
DIP Package						
MCE05S05D	**207-9687**	3.81	3.71	3.58	3.42	3.25
MCE05S12D	**207-9691**	3.81	3.71	3.58	3.42	3.25
MCE05S15D	**207-9693**	3.81	3.71	3.58	3.42	3.25
MCE12S05D	**207-9695**	3.81	3.71	3.58	3.42	3.25
MCE12S12D	**207-9697**	3.81	3.71	3.58	3.42	3.25
MCE12S15D	**207-9699**	3.81	3.71	3.58	3.42	3.25
MCE24S05D	**207-9701**	3.81	3.71	3.58	3.42	3.25
MCE24S12D	**207-9703**	3.49	3.31	3.20	3.10	2.96
MCE24S15D	**207-9705**	3.81	3.71	3.58	3.42	3.25

TRACO POWER

Low Profile AC/DC Power Modules for Chassis and DIN-Rail Mount

TMP and TMPM Models: 4 to 60 Watt

- Single-, dual-, and triple output models
- UL508 and UL60950-1 and IEC/EN60950-1 safety approvals
- Fully encapsulated plastic casing
- Easy connection via screw terminal block (15 – 60 Watt models)
- Also available for PCB mount (4 – 60 Watt models)
- Universal input 85 – 264 VAC or 120 – 370 VDC
- Output voltages from 3.3 VDC up 48 VDC
- Protection class II, double insulation
- Short circuit protection and overload protection
- EMC compliance for commercial, residential and industrial applications
- **3 year product warranty**

CE CB Scheme cULus UL 60950-1 cULus UL 508

www.tracopower.com

25 Watt Single Output Desktop PSUs

- Energy Star Level V
- CEC 2008 and EISA 2007 Compliant
- High Efficiency
- No Load Input Power <0.5 W
- International Safety Approvals
- Compact Dimensions

Dimensions: H=31, W=104.4, D=42mm

Output Connector: Barrel type with 11mm length, 5.5mm dia. outer, 2.5mm dia. inner with centre (+) and outer shell (-) polarity

Input Voltage	90 - 264VAC
Input Frequency	47 - 63 Hz
Efficiency	87% typical
Ripple & Noise	1% pk-pk max, 20 MHz bandwidth
No Load Input Power	<0.5W
Operating Temperature	0°C to +40°C, no derating
Safety Approvals	EN60950-1: UL/cUL60950-1, CE Mark
Emissions	EN55022 Level B conducted & radiated

Mftrs. List No.	Output Power (W)	Output Voltage (V)	Output Current (A)	Order Code
MCEXT5V25W	16.5	5	3.3	182-7430
MCEXT7V25W	20	7		182-7432
MCEXT9V25W	22	9	2.44	182-7433
MCEXT12V25W	25	12	2.08	182-7434
MCEXT24V25W	25	24	1.04	182-7435

	Price Each			
Order Code	1+	5+	10+	25+
All Order Codes	20.41	19.79	19.18	18.38

60 Watt Single Output Desktop PSUs

- Energy Star Level V, ≥ 15 V
- CEC 2008 & EISA 2007 Compliant
- High Efficiency
- No Load Input Power <0.5 W
- Compact Dimensions
- International Safety Approvals

Dimensions: H=32, W=117.4, D=53mm

Output Connector: Barrel type with 11mm length, 5.5mm dia. outer, 2.5mm dia. inner with centre (+) and outer shell (-) polarity

Input Voltage	90 - 264VAC
Input Frequency	47 - 63 Hz
Efficiency	87% typical
Ripple & Noise	200mV pk-pk max, 20 MHz bandwidth
Line Regulation	±0.5% max.
Load Regulation	±5% max.
No Load Input Power	<0.5W
Operating Temperature	0°C to +40°C, no derating
Safety Approvals	EN60950-1:2001, UL/cUL60950-1, CE Mark
Emissions	EN55022 Level B conducted & radiated

Mftrs. List No.	Output Power (W)	Output Voltage (V)	Output Current (A)	Order Code
MCEXT12V60W	60	12	5	182-7436
MCEXT15V60W	60	15	4	182-7437
MCEXT18V60W	60	18	3.33	182-7438
MCEXT24V60W	60	24	2.5	182-7439

	Price Each			
Order Code	1+	5+	10+	25+
All Order Codes	28.83	27.96	27.11	25.96

50 - 150 Watt Single Output PSUs

- Universal Input (85 - 265VAC)
- Power Factor Corrected
- Convection Cooled
- 5 year warranty
- Compact Design

ZWS50BAF: W=50, H=26, D=132mm
ZWS75BAF: W=50, H=33, D=150mm
ZWS100BAF: W=62, H=33, D=155mm
ZWS150BAF: W=75, H=37, D=160mm

Mftrs. List No.	Output Voltage	Output Voltage Range	Output Current	Output Power	Efficiency	Order Code
ZWS-50BAF-5	5V	4.5V to 5.5V	10A	50W	84%	199-5952
ZWS-50BAF-12	12V	10.8V to 13.2V	4.3A	51.6W	85%	199-5953
ZWS-50BAF-24	24V	21.6V to 26.4V	2.1A	50.4W	87%	199-5954
ZWS-75BAF-12	12V	10.8V to 13.2V	6.3A	75W	85%	199-5955
ZWS-75BAF-24	24V	21.6V to 26.4V	3.2A	76.8W	87%	199-5956
ZWS-75BAF-48	48V	43.2V to 52.8V	1.6A	76.8W	88%	199-5957
ZWS-100BAF-12	12V	10.8V to 13.2V	8.5A	102W	88%	199-5958
ZWS-100BAF-15	15V	13.5V to 16.5V	6.7A	100.5W	88%	199-5961
ZWS-100BAF-24	24V	21.6V to 26.4V	4.3A	103.2W	89%	199-5962
ZWS-150BAF-12	12V	10.8V to 13.2V	12.5A	150W	88%	199-5963
ZWS-150BAF-24	24V	21.6V to 26.4V	6.3A	151.2W	90%	199-5964
ZWS-150BAF-48	48V	39.5V to 52.8V	3.2A	153.6W	91%	199-5965

Mftrs.		Price Each			
List No.	**Order Code**	1+	5+	10+	25+
ZWS-50BAF-5	**199-5952**	54.36	52.72	51.18	46.05
ZWS-50BAF-12	**199-5953**	61.39	57.55	53.13	46.05
ZWS-50BAF-24	**199-5954**	61.39	57.55	53.13	46.05
ZWS-75BAF-12	**199-5955**	50.24	47.53	45.09	42.89
ZWS-75BAF-24	**199-5956**	82.56	77.40	71.45	61.95
ZWS-75BAF-48	**199-5957**	50.24	46.89	43.96	41.38
ZWS-100BAF-12	**199-5958**	71.08	66.34	62.19	58.53
ZWS-100BAF-15	**199-5961**	71.08	66.35	62.19	58.53
ZWS-100BAF-24	**199-5962**	57.93	54.07	50.69	47.71
ZWS-150BAF-12	**199-5963**	67.64	63.99	60.71	57.74
ZWS-150BAF-24	**199-5964**	67.64	63.13	59.19	55.71
ZWS-150BAF-48	**199-5965**	93.12	87.30	80.59	69.86

40 - 65 Watt AC/DC Medical PSUs

- Industry standard footprint
- Wide Range AC Input
- Dual input fuses

Dimensions: W=51, L=104, H=30mm

Input Voltage	90 to 264V AC, 120 to 370V DC
Input Frequency	45 to 63Hz
Inrush Current	<40A max at 115V AC input, 25°C ambient cold start
Operating Temperature	0°C to 70°C

Mftrs. List No.	Output Voltage	Output Current	Output Power	Efficiency	Order Code
CSS-65-5	5V	8A	40W	81%	199-5983
CSS-65-12	12V	5A	60W	86%	199-5979
CSS-65-15	15V	4A	60W	86%	199-5980
CSS-65-24	24V	2.71A	65W	87%	199-5981
CSS-65-48	48V	1.36A	65W	87%	199-5982

Mftrs.		Price Each			
List No.	**Order Code**	1+	5+	10+	25+
CSS-65-5	**199-5983**	48.65	45.60	42.11	36.50
CSS-65-12	**199-5979**	40.97	39.74	38.57	37.48
CSS-65-15	**199-5980**	47.70	44.71	41.28	35.78
CSS-65-24	**199-5981**	40.97	39.74	38.57	37.48
CSS-65-48	**199-5982**	32.36	30.20	28.31	26.65

65 Watt Single Output PSUs

Medical

- Output Voltages 5, 12, 15, 24, 48 V
- Medical Approval (BF rated)
- Dual Input Fuses
- Less than 0.3 Watt Off-Load Power Draw
- Convection cooled
- Efficiency up to 89 %
- Standard 2 x 4 inch Package
- Applications: Medical Equipment, Dental and Optometry Equipment, Server and Datacom, Test and Measurement, Broadcast, LED Displays and Lighting and Security Systems

Dimensions (mm): H=22.9, W=101.6, D=50.8

Input Voltage	85V to 265V ac	Load Regulation	0.8%
Efficiency	89% typical	Operating Temperature	-20°C to 70°C
Line Regulation	0.4%		

Mftrs. List No.	Output Voltage Range	Output Current	Output Power	Order Code
MWS65-5	4.5V to 5.5V	11A	55W	209-7822
MWS65-12	10.8V to 13.2V	5A	60W	209-7823
MWS65-15	13.5V to 16.5V	4.4A	66W	209-7824
MWS65-24	21.6V to 26.4V	2.8A	67.2W	209-7826
MWS65-48	43.2V to 52.8V	1.4A	67.2W	209-7827

Mftrs. List No.	**Order Code**	Price Each 1+	10+	25+	50+	100+
MWS65-5	**209-7822**	38.88	33.87	32.50	30.22	28.59
MWS65-12	**209-7823**	50.53	44.03	42.23	39.28	37.15
MWS65-15	**209-7824**	38.12	33.21	31.86	29.63	28.03
MWS65-24	**209-7826**	38.12	33.21	31.86	29.63	28.03
MWS65-48	**209-7827**	31.11	30.18	29.29	28.46	27.67

250 Watt Single Output PSUs

TDK·Lambda

NEW

- Standby Power Draw <0.5 Watt
- Built to meet ErP
- 41mm height (1U compatible)
- Convection Cooled
- 5V / 300mA Aux Supply
- Output Remote Programming
- Allows Use in Lighting Equipment
- Five Year Warranty

Input Voltage	85 to 264V AC, 120 to 373V DC
Input Frequency	45 to 63Hz
Inrush Current	20A @ 115V AC, 40A @ 230V AC
Operating Temperature	-25°C to 70°C

Mftrs. List No.	Output Voltage	Output Voltage Range	Output Current	Efficiency	Order Code
GWS-250-12	12V	10.8V to 13.2V	21A	92%	199-6023
GWS-250-24	24V	22V to 28.8V	10.5A	92%	199-6024
GWS-250-36	36V	32V to 40V	7A	93%	199-6025
GWS-250-48	48V	42V to 57.6V	5.3A	93%	199-6026

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+
GWS-250-12	199-6023	166.47	156.05	144.07	124.89
GWS-250-24	199-6024	116.43	109.10	100.81	94.76
GWS-250-36	199-6025	124.06	120.32	116.79	102.81
GWS-250-48	199-6026	140.93	132.10	121.96	105.73

300 - 400 Watt Single Output PSUs

TDK·Lambda

NEW

- Full Digital Control
- High Efficiency
- Low Profile
- Fits 1U applications

Input Voltage	90 to 264V AC, 120 to 350V DC
Input Frequency	45 to 63Hz
Power Factor	0.97 typical
Operating Temperature	0°C to 50°C

Mftrs. List No.	Output Voltage	Output Current	Output Power	Earth Leakage	ORing FET	Remote On/Off	Order Code
EFE300-12-ECMDS	12V	25A	300W	858µA	×	×	199-6055
EFE300-24-ECMDS	24V	12.5A	300W	858µA	×	×	199-6056
EFE400-12-ECMDS	12V	33.3A	400W	858µA	×	×	199-6057
EFE400-24-ECMDS	24V	16.7A	400W	858µA	×	×	199-6059
Medical							
EFE300M-12-5-ECMDL-YT	12V	25A	300W	300µA	✓	✓	199-6061
EFE300M-24-5-ECMDL-YT	24V	12.5A	300W	300µA	✓	✓	199-6062
EFE300M-48-5-ECMDL-YT	48V	6.25A	300W	300µA	✓	✓	199-6063
EFE400M-12-5-ECMDL-YT	12V	33.3A	400W	300µA	✓	✓	199-6064
EFE400M-24-5-ECMDL-YT	24V	16.7A	400W	300µA	✓	✓	199-6065
EFE400M-48-5-ECMDL-YT	48V	8.3A	400W	300µA	✓	✓	199-6066

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
EFE300-12-ECMDS	199-6055	239.37	224.49	219.24	213.99	179.53
EFE300-24-ECMDS	199-6056	209.58	194.91	184.43	171.85	157.19
EFE400-12-ECMDS	199-6057	198.16	192.42	187.00	181.88	177.03
EFE400-24-ECMDS	199-6059	284.95	266.82	260.58	254.35	213.71
Medical						
EFE300M-12-5-ECMDL-YT	199-6061	206.87	198.37	190.53	183.30	176.60
EFE300M-24-5-ECMDL-YT	199-6062	228.18	218.74	206.97	192.87	176.40
EFE300M-48-5-ECMDL-YT	199-6063	180.20	170.46	161.72	153.83	– –
EFE400M-12-5-ECMDL-YT	199-6064	364.59	341.78	315.53	273.52	– –
EFE400M-24-5-ECMDL-YT	199-6065	277.85	260.46	240.46	208.44	– –
EFE400M-48-5-ECMDL-YT	199-6066	212.87	198.68	186.26	175.31	– –

60 Watt Single Output PSUs

NEW

EMERSON Network Power

- Medical and ITE Safety Approvals
- Universal input
- 2" x 4" footprint
- Remote sense
- Overload and short circuit protection
- Adjustable output voltage
- High MTBF
- Less than 300 mW no-load power consumption
- 0°C to +80°C operation
- Input power < 74 watts
- UL Class I approved
- Class II approved (with Class A EMI)
- Dual AC fuses

Dimensions: H=25.6, W=101.6, D=50.8mm

Input Voltage	90-264 VAC. 127-300 VDC
Input Frequency	47-63 Hz
Inrush current	<50A peak @ 230 VAC, cold start @ 25°C
Efficiency	87%
Adjustment range	±20% minimum

Mftrs. List No.	Output Voltage	Output Current	Order Code
NPS62-M	5V	12A	188-6193
NPS63-M	12V	5A	188-6194
NPS65-M	24V	2.5A	188-6195

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
NPS62-M	188-6193	26.05	25.08	23.99
NPS63-M	188-6194	26.05	24.49	23.45
NPS65-M	188-6195	26.05	24.49	23.45
Cover Kit			1+	
LPX50	188-6208		12.56	

600 Watt Enclosed Single Output PSUs

EMERSON Network Power

Dimensions (mm): H=61, W=190.5, D=114.3

- 600W output power
- 7.41 W/cu-in
- Industrial/Medical safety
- Optional 5 V @ 2 A Housekeeping
- High Efficiency: 89% typical
- Variable speed "Smart Fans"
- DSP controlled front end
- Conformal coat option
- Margin programming
- OR-ing FET

NEW

Input Voltage	85-264V ac
Input Frequency	47-440Hz
Inrush Current	≤25A peak, either hot or cold start
Power Factor	0.99 typical
Efficiency	>89% at full load
Leakage Current	<0.3mA @ 264V ac
Power Line Transient	MOV directly after the fuse
Operating Temperature	-40°C to +70°C, linear derating to 50% from 50°C to 70°C

Mftrs. List No.	Output Voltage	Adjustment Range	Output Current	Order Code
IEC Input				
LCM600L	12V	9.6V to 14.4V	52A	211-5738
LCM600Q	24V	19.2V to 28.8V	27A	188-6217
LCM600U	36V	28.8V to 43.2V	16.7A	211-5737
LCM600W	48V	38.4V to 57.6V	14A	188-6218
Terminal Block Input				
LCM600L-T	12V	9.6V to 14.4V	52A	211-5740
LCM600Q-T	24V	19.2V to 28.8V	27A	211-5741
LCM600U-T	36V	28.8V to 43.2V	16.7A	211-5739
LCM600W-T	48V	38.4V to 57.6V	14A	211-5742

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
IEC Input				
LCM600L	NEW 211-5738	185.36	176.09	167.28
LCM600Q	188-6217	255.22	239.90	228.89
LCM600U	NEW 211-5737	182.27	173.16	164.50
LCM600W	188-6218	261.81	246.10	231.33
Terminal Block Input				
LCM600L-T	NEW 211-5740	182.27	173.16	164.50
LCM600Q-T	NEW 211-5741	185.92	176.62	167.79
LCM600U-T	NEW 211-5739	185.92	176.62	167.79
LCM600W-T	NEW 211-5742	185.92	176.62	167.79

120-480 Watt Single Output DIn Rail PSUs

EMERSON Network Power

NEW

- New visual diagnostic LED
- 3 Status LEDs: Input, Output and Alarm
- DC OK Relay
- Parallel Operation Capability
- Screw terminal connections
- Slim form factor
- High Efficiency > 90% Typ.
- Full Power at 60 °C
- Industrial Grade Design
- Metal case
- MTBF > 450,000h demonstrated at 40°C
- Active PFC > 0.92
- Adjustable output
- Overvoltage protection with autorecovery
- Continuous short circuit and overload protection

Input range	85-264 VAC, 90-375 VDC
Frequency	47-67 Hz, 400 Hz
Efficiency	> 90%
Inrush current	ADN5-24-1PM-C: < 15 A
	ADN10-24-1PM-C: < 30 A
	ADN20-24-1PM-C: < 40 A

Mftrs. List No.	Power	Output Voltage	Output Current	Dimensions (mm) H	W	D	Order Code
ADN5-24-1PM-C	120W	24V	5A	123	50	111	188-6250
ADN10-24-1PM-C	240W	24V	10A	123	60	111	188-6251
ADN20-24-1PM-C	480W	24V	20A	123	87	126	188-6252

Continues on next page

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
ADN5-24-1PM-C	188-6250	198.86	186.93	178.35
ADN10-24-1PM-C	188-6251	295.48	277.77	265.02
ADN20-24-1PM-C	188-6252	447.42	420.57	401.26

150 Watt Single Output PSUs

NEW

EMERSON Network Power

- Medical and ITE safeties
- Active power factor correction
- 2" x 4" footprint
- Remote sense
- Power fail
- Adjustable main output
- Overvoltage protection
- Overload protection
- Thermal overload protection

Dimensions: H=33, W=101.6, D=50.8mm

Input Voltage	90-264 VAC. 120-300 VDC	Efficiency	88% typical at full load
Input Frequency	47-63 Hz	Adjustment range	±10% minimum on the main outputs
Inrush current	50A max. @ 25°C	Fan output	12V @ 1A isolated, ±10%

Mftrs. List No.	Output Voltage	Output Current (convection)	Output Current (15 CFM airflow)	Order Code
LPS102-M	5V	16A	24A	188-6182
LPS103-M	12V	8.3A	12.5A	188-6183
LPS104-M	15V	6.7A	10A	188-6184
LPS105-M	24V	4.2A	6.3A	188-6185
LPS108-M	48V	2.1A	3.1A	188-6187

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
LPS102-M	188-6182	93.08	87.50	83.49
LPS103-M	188-6183	93.08	87.50	82.25
LPS104-M	188-6184	48.48	43.79	39.92
LPS105-M	188-6185	93.08	87.50	83.49
LPS108-M	188-6187	93.08	87.50	83.49

Non-Isolated DC/DC Conveters

APTS/PDT003/PVX003: H=6.25, W=12.2, D=12.2mm
APXK/PDT006/PVX006: H=7.25, W=12.2, D=12.2mm
PDT012/PVX012: H=8.5, W=12.2, D=12.2mm

- Cost efficient open frame design
- GE Energy formerly Lineage Power

NEW

- Tunable Loop™ to optimize dynamic output voltage response
- Fixed switching frequency
- Output overcurrent protection
- Overtemperature protection
- Remote On/Off
- Digital interface through the PMBus™ protocol 9PDT Series only)
- Ability to sink and source current

Applications

- Distributed power architectures
- Intermediate bus voltage applications
- Telecommunications equipment
- Servers and storage applications
- Networking equipment
- Industrial equipment

Mftrs. List No.	Input Voltage	Output Voltage	Output Current	Order Code
Operating Temperature Range: -40°C to 105°C				
APTS003A0X-SRDZ	4.5V to 14V	0.59V to 5.5V	3A	207-6811
Operating Temperature Range: -40°C to 85°C				
APTS003A0X-SRZ	4.5V to 14V	0.59V to 5.5V	3A	207-6812
APXK004A0X4-SRZ	8V to 16V	0.59V to 8V	4A	207-6817
PDT003A0X3-SRZ	3V to 14.4V	0.45V to 5.5V	3A	207-6904
PDT006A0X3-SRZ	3V to 14.4V	0.45V to 5.5V	6A	207-6905
PDT012A0X3-SRZ	3V to 14.4V	0.45V to 5.5V	12A	207-6906
PVX003A0X3-SRZ	3V to 14.4V	0.6V to 5.5V	3A	207-6907
PVX006A0X3-SRZ	3V to 14.4V	0.6V to 5.5V	6A	207-6908
PVX012A0X3-SRZ	3V to 14.4V	0.6V to 5.5V	12A	207-6909

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
Operating Temperature Range: -40°C to 105°C						
APTS003A0X-SRDZ	207-6811	7.14	6.65	6.32	5.94	5.65
Operating Temperature Range: -40°C to 85°C						
APTS003A0X-SRZ	207-6812	9.16	8.53	8.09	7.60	7.24
APXK004A0X4-SRZ	207-6817	11.34	10.77	10.23	9.72	9.23
PDT003A0X3-SRZ	207-6904	6.92	6.45	6.12	5.77	5.47
PDT006A0X3-SRZ	207-6905	7.93	7.69	7.46	7.24	7.03
PDT012A0X3-SRZ	207-6906	12.46	11.73	11.04	10.48	9.95
PVX003A0X3-SRZ	207-6907	6.92	6.45	6.12	5.77	5.47
PVX006A0X3-SRZ	207-6908	10.24	9.55	9.06	8.54	8.11
PVX012A0X3-SRZ	207-6909	8.00	7.75	7.52	7.30	7.09

Non-Isolated DC/DC Converters

APTS: H=10, W=33, D=13.46mm
ATH/ATS: H=10, W=33, D=13.5mm
ATM: H=9.1, W=33, D=13.5mm

NEW

- Delivers up to 30A of output current
- High efficiency
- Monotonic start-up into pre-biased output
- Remote On/Off
- Remote Sense
- Over current and Over temperature protection
- -P option: Paralleling with active current share
- GE Energy formerly Lineage Power
- -H option: Additional GND pins for improved thermal derating

Applications

- Distributed power architectures
- Intermediate bus voltage applications
- Telecommunications equipment
- Servers and storage applications
- Networking equipment

Mftrs. List No.	Input Voltage	Output Voltage	Output Current	Current Share	Extra Ground Pins	Order Code
APTS030A0X3-SRPHZ	6V to 14V	0.8V to 3.63V	30A	✓	✓	207-6815
ATH030A0X3-SRHZ	4.5V to 5.5V	0.8V to 3.63V	30A	×	✓	207-6825
ATH030A0X3-SRPHZ	4.5V to 5.5V	0.8V to 3.63V	30A	✓	✓	207-6826
ATM030A0X3-SRHZ	2.7V to 4V	0.8V to 2V	30A	×	✓	207-6827
ATS030A0X3-SRHZ	6V to 14V	0.8V to 2.75V	30A	×	✓	207-6829
ATS030A0X3-SRPHZ	6V to 14V	0.8V to 2.75V	30A	✓	✓	207-6830
ATS030A0X3-SRZ	6V to 14V	0.8V to 2.75V	30A	×	×	207-6831

Mftrs. List No.	Order Code	Price Each 1+	5+	10+	25+	50+
APTS030A0X3-SRPHZ	207-6815	21.11	20.47	19.87	19.30	18.76
ATH030A0X3-SRHZ	207-6825	23.36	22.19	21.08	20.03	19.03
ATH030A0X3-SRPHZ	207-6826	23.36	22.19	21.08	20.03	19.03
ATM030A0X3-SRHZ	207-6827	26.89	25.55	24.27	23.06	21.91
ATS030A0X3-SRHZ	207-6829	21.31	20.23	19.23	18.26	17.36
ATS030A0X3-SRPHZ	207-6830	17.39	16.86	16.37	15.91	15.47
ATS030A0X3-SRZ	207-6831	16.31	15.82	15.35	14.92	14.51

AC/DC Single Output Power Supplies

NEW

LPC-20: H=26, W=35, D=118mm
LPC-35: H=30, W=40, D=148mm
LPC-60: H=32, W=42.5, D=162.5mm

- Constant current design
- Withstand 300VAC surge inout for 5 seconds
- Protection: Short circuit, Over voltage
- IP67 rating
- Class II power unit
- Pass LPS
- 100% ful load burn-in test
- Suitable for LED lighting and moving sign application
- 2 years warranty

Input Voltage	90-264 VAC, 127-370 VDC	Load Regulation	±2.0%
Line Regulation	±1.0%	Operating Temperature	-30°C to 70°C

Mftrs. List No.	Output Voltage	Output Current	Output Power	Efficiency	Order Code
LPC-20-350	9V to 48V	350mA	16.8W	83%	211-4209
LPC-20-700	9V to 30V	700mA	21W	83%	211-4210
LPC-35-1050	9V to 30V	1.05A	31.5W	85%	211-4211
LPC-35-1400	9V to 24V	1.4A	33.6W	85%	211-4212
LPC-35-700	9V to 48V	700mA	33.6W	85%	211-4213
LPC-60-1050	9V to 48V	1.05A	50.4W	87%	211-4214
LPC-60-1400	9V to 42V	1.4A	58.8W	85%	211-4216
LPC-60-1750	9V to 34V	1.75A	59.5W	87%	211-4217

Mftrs. List No.	Order Code	Price Each 1+	10+	50+	100+	250+
LPC-20-350	211-4209	21.73	16.65	13.89	13.80	13.70
LPC-20-700	211-4210	21.87	16.76	14.73	14.33	13.94
LPC-35-1050	211-4211	28.70	24.96	23.18	22.30	21.42
LPC-35-1400	211-4212	27.94	24.32	20.87	17.99	17.51
LPC-35-700	211-4213	28.70	24.96	23.18	22.30	21.42
LPC-60-1050	211-4214	32.29	26.89	24.81	23.06	21.50
LPC-60-1400	211-4216	34.67	28.03	24.08	22.23	21.64
LPC-60-1750	211-4217	24.46	23.75	23.08	22.45	21.85

i-Buy
INTELLIGENT ONLINE BUYING SYSTEM PROVIDING
Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.
farnell.com/ibuy

AC/DC Single Output Power Supplies

NEW

Dimensions (mm): H=38.8, W=68, D=244.2

- Built in active PFC function
- Protection: Short circuit, Over current, Over voltage, Over temperature
- IP67 / IP65 (A version only) rating
- Three in one dimming function
- OCP point adjustment through output cable (All versions) or internal potentiometer (A version only)
- Suitable for LED lighiting and street lighting applications
- 5 year warranty

Input Voltage	90-305 VAC, 127-431 VDC		
Line Regulation	±0.5%	Operating Temperature	-40°C to 70°C
Load Regulation	±2.0% 12V versions, ±0.5% 24V versions		

Mftrs. List No.	Output Voltage	Output Current	Output Power	Efficiency	Order Code
HLG-240H-12	12V	16A	192W	90%	211-4205
HLG-240H-12A	12V	16A	192W	90%	211-4206
HLG-240H-24	24V	10A	240W	93%	211-4207
HLG-240H-24A	24V	10A	240W	93%	211-4208

		Price Each				
Mftrs. List No.	Order Code	1+	10+	50+	100+	250+
HLG-240H-12	211-4205	134.95	112.40	103.71	96.36	89.89
HLG-240H-12A	211-4206	137.65	114.65	105.79	98.29	91.69
HLG-240H-24	211-4207	134.95	112.40	103.71	96.36	89.89
HLG-240H-24A	211-4208	137.55	114.56	105.69	98.20	91.61

1 Watt Isolated Single Output DC/DC Converters

NEW

PIN CONNECTIONS	
Pin	
1	+Vin
3	-Vin
4	-Vout
5	0V
6	NC

The MTU1 series is a range of miniature surface mount, high performance 1W DC/DC converters. With a footprint reduction of over 50% from the previous generation of 1W SMD DC/DC from Murata, offering 1W of available output power over the full industrial temperature range of -40°C to 85°C. This more efficient design offers improved regulation performance for applications where a wide output voltage variation can not be tolerated . The devices are suitable for all applications where high volume production is envisaged.

- Footprint over pins 0.69cm^2
- Single isolated output
- 1kVDC Isolation
- MSL Level 1
- Power density 1.71W/cm^3
- UL 94V-0 Package material
- 5V & 12V Input
- 5V, 9V, 12V & 15V output
- Toroidal magnetics

Mftrs. List No.	Input Voltage	Output Voltage	Output Current	Efficiency	Order Code
MTU1S0505MC	5V	5V	200mA	83%	186-7135
MTU1S0509MC	5V	9V	111mA	86%	186-7136
MTU1S0512MC	5V	12V	83mA	87%	186-7137
MTU1S0515MC	5V	15V	67mA	87%	186-7138
MTU1S1205MC	12V	5V	200mA	84%	186-7139
MTU1S1209MC	12V	9V	111mA	87%	186-7140
MTU1S1212MC	12V	12V	83mA	88%	186-7141
MTU1S1215MC	12V	15V	67mA	88%	186-7142

Mftrs.		Price Each			
List No.	Order Code	1+	10+	25+	50+
MTU1S0505MC	186-7135	4.60	4.19	3.82	3.48
MTU1S0509MC	186-7136	4.71	4.28	4.08	3.95
MTU1S0512MC	186-7137	4.60	4.19	3.82	3.48
MTU1S0515MC	186-7138	4.71	4.28	4.08	3.95
MTU1S1205MC	186-7139	4.60	4.19	3.82	3.48
MTU1S1209MC	186-7140	4.71	4.28	4.08	3.95
MTU1S1212MC	186-7141	4.60	4.19	3.82	3.48
MTU1S1215MC	186-7142	4.60	4.19	3.82	3.48

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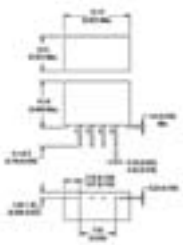
3 Watt Isolated Single Output DC/DC Converters

NEW

PIN CONNECTIONS	
Pin	Single Output
1	-Vin
2	+Vin
3	-Vout
4	+Vout



- Typical efficiency from 83%
- Power density 2.68W/cm^3
- Wide temperature performance at full Watt load: -40°C to 85°C
- UL 94V-0 package material
- No heatsink required
- Industry standard pinout
- 5V & 12V input
- 5V, 9V, 12V, & 15V output
- Fully encapsulated with toroidal magnetics
- No external components required
- No electrolytic or tantalum capacitors

The MEE3 series is a new range of high performance 3W DC/DC converters, offering 3W of available output power in a previously rated 2W package capable of operation over the full industrial temperature range of -40°C to 85°C.
Available in an industry standard SIP package, with a pin compatible power upgrade path from the 1W NME/NKE and 2W NML series', they are ideally suited for providing local supplies on control system boards with the added benefit of 1kVDC galvanic isolation.

Mftrs. List No.	Nom. Input Voltage	Ouput Voltage	Ouput Current	Order Code
MEE3S0505SC	5V	5V	600mA	208-3738
MEE3S0509SC	5V	9V	333mA	208-3739
MEE3S0512SC	5V	12V	250mA	208-3740
MEE3S0515SC	5V	15V	200mA	208-3741
MEE3S1205SC	12V	5V	600mA	208-3742
MEE3S1209SC	12V	9V	333mA	208-3743
MEE3S1212SC	12V	12V	250mA	208-3744
MEE3S1215SC	12V	15V	200mA	208-3745

Mftrs.		Price Each				
List No.	Order Code	1+	10+	25+	50+	100+
MEE3S0505SC	208-3738	8.90	8.22	8.13	7.93	7.53
MEE3S0509SC	208-3739	8.90	8.22	8.13	7.93	7.53
MEE3S0512SC	208-3740	8.90	8.22	8.13	7.93	7.53
MEE3S0515SC	208-3741	8.90	8.22	8.13	7.93	7.53
MEE3S1205SC	208-3742	8.90	8.22	8.13	7.93	7.53
MEE3S1209SC	208-3743	8.90	8.22	8.13	7.93	7.53
MEE3S1212SC	208-3744	8.90	8.22	8.13	7.93	7.53
MEE3S1215SC	208-3745	8.90	8.22	8.13	7.93	7.53

Isolated 1W Single Output Surface Mount

NTE Series

Pin out specification

Pin 1 GND	Pin 8 + V
Pin 3 Vin	Pin 10 NA
Pin 5 NA	Pin 12 NA
Pin 7 0V	Pin 14 NA

NA - Not available for electrical connection

- Wide temperature performance at full load -40°C to 85°C
- Single isolated output
- 1KVDC isolation
- Efficiency to 78%
- 3V, 5V & 12V input
- 5V, 9V, 12V and 15V output
- Toroidal magnetics
- Internal SMD construction
- No heatsink required
- **UL 94V-0** package material
- Lead free compatible
- Lead frame technology

Nominal Input Voltage (V)	Output Voltage (V)	Output Current (mA)	Mftrs List No.	Order Code
3.3	3.3	303	NTE0303MC	161-0436
3.3	5	200	NTE0305MC	161-0437
5	5	200	NTE0505MC	102-1599
5	9	111	NTE0509MC	102-1600
5	12	83	NTE0512MC	102-1601
5	15	66	NTE0515MC	102-1602
12	5	200	NTE1205MC	102-1603
12	9	111	NTE1209MC	102-1604
12	12	83	NTE1212MC	102-1605
12	15	66	NTE1215MC	102-1607

		Price Each				
	Order Code	1+	10+	25+	50+	100+
NTE Series	All Order Codes	5.60	5.32	5.06	4.90	4.53

Board Mounted Power

- ✓ Low cost
- ✓ High reliability
- ✓ Short lead times
- ✓ Industry standard footprints
- ✓ Highest power density

20W DC-DC in 1"x1"

5W AC-DC in 1"x1"

AC-DC low power board mounted ranges

ECE series
- 5 to 40 Watts
- Ultra compact from 1" x 1"
- Encapsulated
- Single and dual outputs
- <0.3 Watts no load input power

ECL series
- 5 to 30 Watts
- Ultra compact size
- Single & multi outputs
- Open-frame & encapsulated
- <0.3 Watts no load input power

Industry standard DC-DC ranges

1 to 3 Watts
- SIP & DIP packages
- Regulated & unregulated versions
- ±10%, 2:1 & 4:1 inputs
- 500 V to 6 kV isolation

2 to 60 Watts
- 1 x 1", 1 x 2", 2 x 2" & DIP-24 footprints
- Regulated single, dual & triple outputs
- Wide 2:1 & 4:1 inputs
- Up to 3.5 kV isolation

Medical safety approvals
- 3 to 10 Watts
- Meets IEC60601-1 3rd edition
- 4000 VAC reinforced insulation
- 2µA patient leakage current

LED drivers
- 5 to 56 Watts
- Up to 1000 mA output
- Constant current output
- 95% efficiency

Surface mount power
- 1 & 2 Watts
- Regulated & unregulated versions
- ±10, 2:1 & 4:1 inputs
- Single & dual outputs

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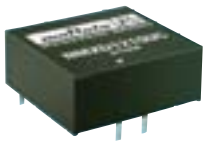
NMXU Series 5W DC/DC Converters

Small Outline



Pin dia=1.02

Underside View

	Connections Single O/P	Dual O/P
1	GND	GND
2	+I/P	+I/P
3	+O/P	+O/P
4	OV	OV
5	-O/P	-O/P

- Fully encapsulated
- Industry standard pinout
- Pin compatible with NMXSO series
- 1 KV dc isolation
- Single or dual output
- Low profile package
- Efficiency to 85%
- 5.88cm^2 footprint
- No heatsink required
- **UL94-VO** package
- No external components required
- Internal SMD construction

Input voltage range (nominal 5, 12V)	±10%
Load voltage regulation (10% to 100% full load)	
5V output types	7% typ.
12 and 15V output types	5% typ.
Line voltage regulation (10% to 100% full load)	1.1%
Output voltage accuracy	5%, -2.5%
Output ripple and noise	125mV pk to pk
Operating temperature	-25°C to 70°C

V in (Nominal)	V out	Output Current	Mftrs. List No.	Order Code
Single Output				
5	5	1A	NMXS0505UC	102-1565
5	12	417mA	NMXS0512UC	102-1567
5	15	333mA	NMXS0515UC	102-1569
12	5	1A	NMXS1205UC	102-1571
12	12	417mA	NMXS1212UC	102-1573
12	15	333mA	NMXS1215UC	102-1575
Dual Output				
5	12	208mA	NMXD0512UC	102-1554
5	15	167mA	NMXD0515UC	102-1556
12	12	208mA	NMXD1212UC	102-1560
12	15	167mA	NMXD1215UC	102-1562

	Order Code	Price Each 1+	5+	10+	25+
Single OutputNMXS0505UC	**All Order Codes**	18.64	18.42	18.26	18.08
Dual OutputNMXD0505UC	**All Order Codes**	22.37	21.35	20.90	19.47

1W DC/DC Converters - Dual O/P

NMJ Series

- **UL60950** Recognised
- Dual output
- 5.2KVDC isolation
- Efficiency to 70%
- 5V & 12V input
- 5V, 9V, 12V and 15V output
- Power sharing
- Toroidal magnetics
- Internal SMD construction
- No heatsink required
- **UL 94V-0** package material
- **SIP** package style

Pin out specification	Nominal Input Voltage (V)	Output Voltage (V)	Output Current (mA)	Mftrs. List No.	Order Code
Pin 1 Vin	5	±5	±100	NMJ0505SC	102-1510
Pin 2 GND	5	±9	±55	NMJ0509SC	102-1511
Pin 5 -V	5	±12	±42	NMJ0512SC	102-1512
Pin 6 OV	5	±15	±33	NMJ0515SC	102-1513
Pin 7 +V	12	±5	±100	NMJ1205SC	102-1514
	12	±9	±55	NMJ1209SC	102-1516
	12	±12	±42	NMJ1212SC	102-1517
	12	±15	±33	NMJ1215SC	102-1518

	Order Code	Price Each 1+	10+	25+	50+	100+
NMJ Series	**All Order Codes**	9.49	8.48	8.33	8.19	7.38

WX 1 Soldering Station

The next generation high power 'intelligent' soldering unit with additional work bench control capability. This allows for the selection and direct control of additional work bench tools such as WFE fume extraction systems and WHP heating plates resulting in a simpler and more efficient work area. The unit has one independent channel capable of driving one WX soldering tool of up to 200 W.

- An independent tool channel with automatic recognition of all WX tools
- Multilingual menu and display information - 7 languages (D, GB, F, I, ES, P, CN)
- Antistatic glass touch sensitive panel
- LC graphic display with blue back lighting
- Menu selection via 'Turn & Click' control with acoustic confirmation
- Interface for use with robotic soldering machines
- Unique soldering iron calibration function
- Front USB socket for firmware updates, parameter setting and monitoring via USB stick
- Digital data transfer system for ultra precise adjustment
- Control and monitoring of other connected Weller units - WFE fume extraction systems and heating plates
- ESD safe
- Temperature range 50 - 500°C (tool dependent)

Contents of WX 1010: WX 1 Control unit, WXP 120 soldering iron and WDH 10 safety rest.

Contents of WX 1011: WX 1 Control unit, WXMP soldering iron and WDH 50 safety rest.

Contents of WX 1012: WX 1 Control unit, WXP 65 soldering iron and WDH 10 safety rest.

Input Voltage	230V / 50Hz	Temperature Control	+50°C to +550°C (150°F-999°F)
Power Input	200W	Temperature Accuracy	± 9°C (±17°F)
Protection Class	I	Temperature Stability	± 2°C (±9°F)
Dimensions (LxWxH)	170 x 151 x 130mm		

Description	Order Code	Price Each 1+
WX 1 Control Unit	**189-9050**	325.55
WX 1010 Soldering Station	**189-9047**	497.00
WX 1011 Soldering Station	**189-9048**	541.00
WX 1012 Soldering Station	**189-9049**	518.00
Individual Items		
WXP 65 Soldering Iron	**189-9051**	173.70
WXP 65 Soldering Iron with Safety Rest	**189-9052**	191.75
WXP 120 Soldering Iron	**185-1612**	163.25
WXP 120 Soldering Iron with Safety Rest	**185-1613**	171.80
WXMP Micro Soldering Iron	**185-1614**	119.60
WXMP Micro Soldering Iron with Safety Rest	**185-1616**	219.00
WX Connecting Cable	**196-1326**	8.25
WX Adapter for PC	**196-1327**	14.90
WX Adapter for WFE/WHP	**196-1328**	14.90

WX 2 Soldering Station

The next generation high power 'intelligent' soldering unit with additional work bench control capability. This allows for the selection and direct control of additional work bench tools such as WFE fume extraction systems and WHP heating plates resulting in a simpler and more efficient work area. The unit has 2 independent channels capable of driving 2 WX soldering tools of up to 120 W simultaneously or 1 200 W tool.

- 2 independent tool channels with automatic recognition of all WX tools
- Multilingual menu and display information - 7 languages (D, GB, F, I, ES, P, CN)
- Antistatic glass touch sensitive panel
- LC graphic display with blue back lighting
- Menu selection via 'Turn & Click' control with acoustic confirmation
- Interface for use with robotic soldering machines
- Unique soldering iron calibration function
- Front USB socket for firmware updates, parameter setting and monitoring via USB stick
- Digital data transfer system for ultra precise adjustment
- Control and monitoring of other connected Weller units - WFE fume extraction systems and heating plates
- ESD safe
- Temperature range 50 - 500°C (tool dependent)

Contents of WX2020: WX 2 Control unit, 2 x WXP 120 Soldering irons and 2 x WDH 10 Safety rest.

Contents of WX2021: WX 2 Control unit, WXMP Micro soldering iron, WXMT Micro tweezer, WDH 50 Safety rest and WDH 60 Safety rest.

Input Voltage	230V / 50Hz	Temperature Control	+50°C to +550°C (150°F-999°F)
Power Input	200W	Temperature Accuracy	± 9°C (±17°F)
Protection Class	I	Temperature Stability	± 2°C (±9°F)
Dimensions (LxWxH)	170 x 151 x 130mm		

Continues on next page

Description	Order Code	Price Each 1+
WX 2 Control Unit	185-1606	367.00
WX 2020 Soldering Station	185-1607	710.00
WX 2021 Soldering Station	185-1608	840.00
Individual Items		
WXMT Micro Tweezer	185-1609	118.65
WXMT Micro Tweezer with Safety Rest	185-1610	259.00
WDH 60 Safety Rest	185-1611	59.80
WXP 120 Soldering Iron	185-1612	163.25
WXP 120 Soldering Iron with Safety Rest	185-1613	171.80
WXMP Micro Soldering Iron	185-1614	119.60
WXMP Micro Soldering Iron with Safety Rest	185-1616	219.00
WXP 200 Soldering Iron	185-1617	195.00
WXP 200 Soldering Iron with Safety Rest	185-1618	211.65
WDH 31 Safety Rest	189-9054	17.95
WX Connecting Cable	NEW 196-1326	8.25
WX Adapter for PC	NEW 196-1327	14.90
WX Adapter for WFE/WHP	NEW 196-1328	14.90
Tip Retaining Barrel	NEW 196-1423	9.55

WXD 2 Soldering Station

Weller

NEW

- Pneumatic operation (external compressed air supply needed)
- Hot plates and fume extraction units can be controlled from the power unit
- Multilingual menu navigation and click and turn wheel for ease of use
- A total load of 255 W can be connected to the power unit - two 120 W soldering irons can be operated simultaneously and independently
- Plug in / plug out of tools with unmistakeable locations
- Key data is stored on the tool you're using
- No calibration of the power unit is needed
- All WX series tools can be connected to the power unit, data stored on the hand pieces is digitally transferred without external interference

Contents of WXD 2010: WXD 2 Control unit, WXDP 120 Desoldering iron and WDH 70 Safety rest.

Contents of WXD 2020: WXD 2 Control unit, WXDP 120 Desoldering iron, WXP 120 Soldering iron, WDH 70 Safety rest and WDH 10 Safety rest.

Power consumption	255 W	ESD safe	Yes
Channels	2	Display	LCD backlighting graphic display
Interface	Yes		

Description	Order Code	Price Each 1+	3+
WXD 2 Control Unit	209-7805	519.00	503.45
WXD 2010 Soldering Station	209-7803	784.00	760.50
WXD 2020 Soldering Station	209-7804	956.00	927.30
Individual Items			
WXDP 120 Soldering Iron with Safety Rest	209-7806	267.00	259.00

WD 2M Control Unit

Weller

NEW

The WD 2M control unit is primarily for use with the WMRP micro soldering iron or the WMRTH micro tweezer but can also be used with the entire range of Weller electronically controlled soldering and rework tools that are compatible with the units. The WD 2M unit has dual outputs and can drive 2 tools of upto 160 watts rating, independently of each other, or one tool rated at 150watts.They have a closed loop temperature control system to provide dynamic temperature stability.

- High speed control for WMRP micro-soldering irons und WMRT micro-desoldering tweezers
- High-contrast LCD display
- Three temperatures can be programmed independently of one another using fixed temperature keys
- Special function menu for customer-specific calibration function, temperature reduction, locking function, remote ID for ISO applications
- Potential equalization (Hard-earthed on delivery)
- The soldering tools have to be ordered separately
- Automatic tool identification
- Parallel operation of 2 soldering tools with max. 80W
- If a 150W tool is connected, the second channel is switched off

Channels	2	Channels	2
Power Supply	230V	Power Supply	230V
Power Input	160W	Temperature Range	50°C to 450°C
Protection Class	I	Dimensions	134x108x147mm

Kit Contents: Control unit and Euro mains cable.

Mftrs. List No.	Plug Type	Order Code	Price Each 1+
WD 2M, EU CORD	Euro	224-9941	349.00

MFR-1150 Desoldering System

OKI

NEW

The MFR-1150 desolder system with venturi workstand provides a shop air option for all MFR series power supplies. This system is a complete shop air desoldering system that includes a power supply, desolder hand-piece and venturi workstand. The MFR-UK5 Upgrade kit can also turn your existing MFR-1100 or MFR-2200 series systems and older MFR-abc systems into a state-of-the-art desoldering system. The built in venturi provides 25 inHg (.85 Bar), which substantially increases desolder capability. The new hand-piece has been designed to be used in two configurations. The MFR-H5-DS can be used as a pencil or as a pistol style by simply adding a clip on grip supplied with the hand-piece. Solder collection capabilities have been increased by 40% from previous MFR desolder systems and the innovative replaceable collection chamber enables reduced downtime and quicker changeover.

- SmartHeat® Technology provides exceptional power for high thermal demand applications
- High-power output at a fixed temperature provides high throughput with excellent yields
- Four handpieces available for increased application solutions for soldering and rework on one system
- Each handpiece has a comprehensive range of soldering cartridges or tips for maximum flexibility
- Handpieces are ergonomic for operator safety and comfort
- Input line voltage: 100- 240VAC
- Input line frequency: 50/60Hz grounded circuit
- Power consumption: 65W max.
- Output power: 60W max
- Output frequency: 450KHz
- Ambient operating temperature: 10°C to 40°C
- Maximum enclosure temperature: 55°C

MFR-1150 Contents: Control Unit, Desolder Handpiece, Workstand, Fittings and Air Hose Kit and Tip cleaner.

MFR-UK1 Contents: Solder Cartridge Handpiece (MFR-H1-SC) and Workstand (WS1).

MFR-UK2 Contents: Solder Tip Handpiece (MFR-H2-ST) and Workstand (WS1).

MFR-UK4 Contents: Tweezer Handpiece (MFR-H4-TW) and Workstand (MFR-WSPT).

MFR-UK5 Contents: Desolder Handpiece (MFR-H5-DS) and Workstand (MFR-WSDSX).

Description	Mftrs. List No.	Order Code	Price Each 1+
Desoldering System Kit	MFR-1150	207-8469	352.00
Replacement Accessories			
Universal Workstand with Venturi Box	MFR-WSDSX	207-8470	132.00
Desolder Handpiece and Workstand	MFR-UK5	207-8482	231.00
Upgrade Kit			
Solder Cartridge Handpiece and Workstand	MFR-UK1	207-8484	92.00
Solder Tip Handpiece and Workstand	MFR-UK2	207-8485	92.00
Tweezer Handpiece and Workstand	MFR-UK4	207-8483	149.00

MFR-1300 SmartHeat® Desoldering System

OKI

The MFR-1300 Series Desoldering and Rework Systems are the next generation of standalone desoldering equipment from OK International. The new power supply features an internal pump providing 0.7 bar of vacuum suction force combined with Smartheat® technology that makes through-hole desoldering easy and keeps your products safe from board damage. The new hand-piece has been designed to be used in two configurations. The MFR-H5-DS can be used as a pencil or as a a pistol style by simply adding a clip on grip supplied with the hand-piece. Solder collection capability has been increased by 40% from previous MFR desolder systems and the innovative replaceable collection chamber enables reduced downtime and quicker changeover.

- Self-contained powerful pump
- 2 in 1 ergonomic and flexible hand-piece: pencil or pistol
- Collection chamber with 40% increased capacity
- Innovative collection chamber for quick and easy change
- Dual switchable output
- Compatible with previous MFR Desolder range

MFR-1350 Contents: Power Supply, Desoldering Handpiece and Workstand.

Continues on next page

MFR-1351 Contents: Power Supply, Desoldering Handpiece, Soldering Handpiece, Desoldering Workstand and Soldering Workstand.
MFR-UK1 Contents: Solder Cartridge Handpiece (MFR-H1-SC) and Workstand (WS1).
MFR-UK2 Contents: Solder Tip Handpiece (MFR-H2-ST) and Workstand (WS1).
MFR-UK4 Contents: Tweezer Handpiece (MFR-H4-TW) and Workstand (MFR-WSPT).

Description	Mftrs. List No.	Order Code	Price Each 1+
Solder / Desolder System with Internal Pump	MFR-1350	190-9694	432.00
Desolder System with Internal Pump	MFR-1351	190-9695	513.60
Replacement Accessories			
Desoldering Handpiece	MFR-H5-DS	190-9696	99.00
Desoldering Workstand	MFR-WSDSU	190-9697	40.60
Universal Workstand with Venturi Box	MFR-WSDSX	207-8470	132.00
Optional Accessories			
Solder Cartridge Handpiece and Workstand	MFR-UK1	207-8484	92.00
Solder Tip Handpiece and Workstand	MFR-UK2	207-8485	92.00
Tweezer Handpiece and Workstand	MFR-UK4	207-8483	149.00
Disposable Collection Chamber (Pk10)	MFR-DC10	190-9698	9.00
Replacement Grip for Desoldering Handpiece	MFR-PG	190-9699	17.00
Vacuum Port Filter	AC-VPF	190-9700	2.10
Seal Kit Collection Chamber (Pk2)	AC-SK1	190-9701	6.75
Vacuum Port	AC-VP	190-9702	6.75
ESD Air Hose	AC-VL	190-9703	17.45

ERSA i-CON pico soldering station

kurtz ersa

NEW

The i-CON pico soldering station is the best choice for professional soldering. It offers all functions which are appreciated in the industrial production, e.g. fast heating, standby and calibration. With software and an optional micro SD card there is offered more user safety. For i-Tool pico there are some soldering tips available of series 102.
Delivered with Euro Plug.

Items supplied: electronic station i-CON1, i-Tool soldering iron with 0102CDLF16 soldering tip, 0A50 support stand and Dry Cleaner 0008M
Technical data:
electronic station 0IC113A: continuous power rating: 80 W, supply voltage 230V / 50 Hz, secondary voltage 24 V, temperature range: 150° - 450°
i-Tool soldering iron: voltage 24 V, power 150 W

Mftrs List No.		Order Code	Price Each 1+
I-CON PICO	Soldering station	205-7377	129.54
Available for individual order:			
I-TOOL PICO	Replacement soldering iron with soldering tip	205-7378	78.75
013100J	Replacement heating element for i-TOOL	205-7379	38.88

Soldering Station i-CON NANO

kurtz ersa

- The i-CON NANO is a microprocessor controlled soldering station, ideal for production, maintenance and laboratory
- Stand-by and Shut-down for energy saving and longer durability
- 3 temperatures and stepless temperature setting
- Quickly heats up and reheats thanks to the high performance heating element
- Soldering tips for each soldering requirement available

Technical Data
Power Output: 60W
Temperature Range: +150°C to +450°C

Technical Data
Weight i-Tool NANO: 30 g (without cable)

Mftrs. List No.	Order Code	Price Each 1+
I-CON NANO, EU plug	172-7686	194.26
I-CON NANO UK plug	174-0474	175.13
I-TOOL NANO	184-5781	115.04

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Soldering Station

NEW

TENMA

- Antistatic safety
- Computerized temperature correction to calibrate the temperature difference between the soldering tip and display temperature
- Detachable iron with pencil-style tip
- LED digital display
- Ideal for workshops
- Ideal for lead-free solder, rosin-core, lead-based, silver-bearing or any other
- Available either with European or UK power cord

Supply Voltage 220V
Power 60W
Temperature Range +150°C to +450°C
Output Voltage 24V
Temperature Stability ±1°C (Static)
Display LCD

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
AT60D-EU	207-5392	53.32	51.69	50.05
AT60D-UK	207-5393	53.32	51.69	50.05
Replacement Heating Element				
CBB018722	211-3923	7.24	6.80	6.48

Soldering Station

NEW

TENMA

- Antistatic safety
- Three programmable preset temperature buttons
- Precise temperature control and computerized temperature calibration
- Two-core heating element
- LCD display
- °C/°F temperature
- Available either with European or UK power cord

Supply Voltage 220V
Power 60W
Temperature Range +150°C to +450°C
Output Voltage 28V
Temperature Stability ±1° (Static)
Display LCD

Kit Contents: Power Unit, Soldering Iron, Iron Holder, 0.5mm Conical tip, Sponge, Power Cord and Manual.

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
21-10115 UK	206-4549	40.14	38.93	37.77
21-10115 EU	206-2627	40.14	38.93	37.77
Replacement Heating Element				
CBB018722	211-3923	7.24	6.80	6.48

Soldering Station

NEW

TENMA

- Antistatic safety
- 3 temperature presets for frequently used temperatures
- Detachable iron with pencil-style tip
- Includes cradle stand
- Clear LED digital display, interchangeable between Fahrenheit and Celsius
- Ideal for workshops, onfield soldering jobs
- Display shows temperature setting and actual temperature
- Ideal for lead-free solder, rosin-core, lead-based, silver-bearing or any other
- Available either with European or UK power cord

Supply Voltage
Power
Temperature Range
Output Voltage
Temperature Stability
Display LCD

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
21-10120 UK	206-4550	51.24	49.70	48.22

i-Buy
INTELLIGENT ONLINE BUYING SYSTEM PROVIDING
Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.
farnell.com/ibuy

Hot Air Rework Station

NEW

TENMA

- Closed loop control of sensor, accurate and stable temperature, which can safely desolder the temperature-sensitive components, such as QFP, PLCC, SOP, BGA and so on
- Intelligent cooling system, Delay blast after operation, automatic power off when air temperature is less than 100°C
- Powerful heating element allowing short heating time, good wielding performances at constant or adjustable temperature
- High quality air pump for low noise and vibration levels
- Anti-Static design to aviod bringing damage to PCB board due to static and creepage
- Available either with European or UK power cord

Supply Voltage	220V	Air Pump	Diaphragm
Power	560W	Output Voltage	187 x 135 x 245mm
Temperature Range	+100°C to +480°C	Weight	4.5g
Volume	23l/min		

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
21-10125 UK	**206-4551**	111.52	108.18	104.93
21-10125 EU	**206-2632**	111.52	108.18	104.93
Replacement Heating Element				
CBB020837	**211-3924**	9.52	8.99	8.60

SMD Rework Station

NEW

TENMA

- Dual LCD screen immediately displays working conditions and sets of parameters
- Rapid temperature rise
- Convertible temperature units °C/°F
- Cold air and stopping heating
- Hot air gun is compatible with various kinds of nozzles
- Sleep mode, automatic switch-off for energy saving
- Keys for temperature and air flow adjustment placed right on the handle
- Three groups of stored data facilitate usage
- Temperature compensation ensures stable temperature state
- Malfunction alert (displaying H-E for heating elements and S-E for sensor)
- Delivered with both European and UK power cord

Supply Voltage	220V	Temperature Range	Hot Air Gun: +100°C to +500°C
Power	Hot Air Gun: 800W Pump: 40W Soldering Iron: 50W	Air Volume	Soldering Iron: +200°C to +480°C 20-100% from max.

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
21-10130 UK+EU	**206-2633**	128.27	124.43	120.69
Replacement Soldering Heating Element				
CBB019822	**211-3925**	5.33	5.01	4.79
Replacement Desoldering Heating Element				
CBB020840	**211-3926**	13.39	12.57	11.92

Hot Air and Preheating Rework Station

TENMA

NEW

- Quick Heating, up to 350°C only in 10 seconds
- Temperature sensor keeps the output temperature stable
- Optional cool flow can preheat and cool chip
- Working with AT reworking station to deal with BGA and chip IC
- Smart and Compact design and appearance, easy to carry
- Automatic temperature control, Can work continuously working for long hours, not affecting the function of the device and the temperature of panel won't exceed the standard temperature
- Available either with European or UK power cord

Supply Voltage	220V	Volume	0.18m³/min
Power	540W	Output Voltage	170 x 55 x 140mm
Temperature Range	+100°C to +350°C	Weight	1.1kg

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
21-10135 UK	**206-4552**	40.14	38.93	37.77
21-10135 EU	**206-2634**	40.14	38.93	37.77
Replacement Heating Element				
CBB022791	**211-3927**	9.52	8.99	8.60

ESD Desoldering Pump

DURATOOL

- Metal body with 7.7cm³ volume
- ESD compliant
- Electrical resistance 10^5 OHM
- Heat resistant & conductive carbon fibre nozzle

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
Desoldering Pump, ESD	D01699	**179-2724**	11.58	11.15	10.95
Replacement nozzle, ESD	D01700	**179-2725**	3.24	3.13	3.07

Recordable Inspection Camera kit

DURATOOL

NEW

Allows for easy visual inspections in hard to reach areas and even in total darkness and underwater. Ideal to use in the plumbing, electrical, automotive and construction industries.

- Allows for easy surveying of small, hard-to-reach places
- Water-proof 1m shaft
- LED Light on camera
- IP67 waterproof standard
- 2.7" TFT-LCD monitor
- On Screen dispaly menu
- 17mm Camera head
- Video recording capability, supports up to 32GB micro SD card (128MB supplied)
- Supplied with 3 x accessories: hook,mirror and magnet

Contents: Camera, LCD Monitor, power supply, 1m tube, 3 x accessories hook, mirror and magnet

NB: Requires 4 x AA Batteries for the main unit

Mftrs. List No.	Order Code	Price Each 1+	3+
D01810	**210-3227**	110.74	100.58

Tip Maintenance Kit

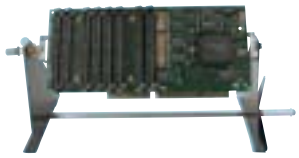
Weller

A set of 3 products (WDC2, Polishing bar and Tip Tinner) which, when used in conjuction with each other, will extend tip life particularly when using lead free solder.

Description	Mftrs. List No.	Order Code	Price Each 1+
Tip Maintenance Kit	0051512799	**167-6500**	33.25
			Price Per Pack
Spare Metal Wool (Pk 2)	T0051384199	**179-2732**	3.85

Board holder

ideal-tek



- Versatile PCB-Holder
- Ideal for populating, desoldering and repairing printed circuit boards
- The board can be turned through 360°
- Dimensions: 300 x 120x 120 mm
- Max. board length: 250 mm
- The holder is supplied without the printed circuit board

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
PC-40	**136-0332**	42.86	41.17	39.62

Fume Extraction System

Weller

Zero Smog 4V Kit with 2 Funnels

NEW

To protect the health of operators, Weller introduces the Zero-Smog 4V, the small fume extration unit. A visual filter monitoring system (red/yellow/green) together with an audible alarm signal gives early warning of the filter condition, guaranteeing optimum performance. The new pressure control system ensures that a constant air flow is maintained at each exctraction arm regardless of the number of arms in operation. The motor speed is adjusted automatically so that energy is saved,noise level is reduced and filter life is prolonged. The Zero-Smog 4V has

Continues on next page

connection points for 4 arms and is fitted with one Easy-Click connection. If more connections are required these can be bought separately. The new Easy-Click system is designed for many different configurations. Control parameters can be loaded via a USB flash drive. Backlight digital display. Ease of navigation with a multilingual menu.

Input Voltage	230V	Sound Level in 1m	48dB
Max. Vacuum	2700Pa	Dimensions (HxWxD)	320x320x395395
Max. Volume	230m³/h	Weight	1919

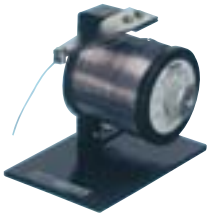
Kit Contents: Zero Smog 4V Unit, Filters, 2x 60mm extraction Funnel, 2x Extraction Arm, 2 x Funnel Nozzle, 2 x Stop Value, 2 x Mounting Bracket and 2 x Extraction Hose.

Mftrs. List No.	Order Code	Price Each 1+
T0053664699	**209-7819**	1,446.00

Dispenser SR 100 and SR 101

kurtz ersa

NEW



- The SR 100 can hold solder reels up to 1000g weight
- Optimal rolling up of the reel
- Flexible solder wire guide is applicable for all common solder wire diameters and enables the rolling up in the required direction
- The assembly set SR 101 enables the synchronous use of a second reel

Mftrs List No.	Description	Order Code	Price Each 1+
SR 100	Dispenser	**162-5362**	58.68
Assembly Set for a second reel:			
SR 101	Dispenser Attachment	**162-5363**	41.52

Digital Microscope

Dino-Lite Digital Microscope The Industry Standard

Digital Microscope

Digital Microscope with Rack AMITA

Rack AM35B

Practical Uses:
- Quality control in industrial field
- After-Sales Services
- Technical teleconferences
- Research and science

Studied and designed for a professional use, Dino-Lite is very compact microscope product range which allows the users all high standard shootings (pictures and videos) even in real time and has a zoom feature that may magnify up to 200X. Measurements features such as lines, angles, diameters and radius, calibration as well are available.
All the following products are sold with profession rack AM35B or standard rack AMITA. Professional Rack AM35B is also available as a spare parts in single packaging.

Features:
- MicroTouch snapshot
- Video frame rate: up to 30fps
- Built-in 8 white-light LED illumination
- Software: DinoCapture with support for measurement functions, calibration option and additional digital zoom
- Interface: High speed USB image transmission (PC)

Resolution	Adjustable magnifications:	Delivered rack	Order Code
1.3 M pixels (1280 x 1024)	10x to 50x, 200x	AMITA	164-0612
1.3 M pixels (1280 x 1024)	10x to 50x, 200x	AM35B	168-5819
1.3 M pixels (1280 x 1024)	10x to 20x, 20x to 92x	AM35B	168-5821
1.3 M pixels (1280 x 1024)	10x to 50x, 200x	AM35B	168-5822
1.3 M pixels (1280 x 1024)	500x	AM35B	168-5823
640* 480pixels (VGA)	10x to 50x, 200x10x~50x, 200x	AM35B	186-1619

Description	Mftrs. List No.	Order Code	Price Each 1+
Digital Microscope with rack AMITA	413T-A	**164-0612**	345.23
Digital Microscope with rack AM35B	413T-X	**168-5819**	423.83
Digital Microscope with rack AM35B	413TL-X	**168-5821**	478.01
Digital Microscope with rack AM35B	413ZT-X	**168-5822**	487.57
Digital Microscope with rack AM35B	413T5-X	**168-5823**	439.76
Digital Microscope with rack 2011-X	2011-X	**186-1619**	211.38
Digital Microscope with AM35B Professional Stand	AD413ZTA-X	**209-8867**	502.62
Professional Rack	AM35B	**164-0613**	143.40

Digital Microscopes

Dino-Lite Digital Microscope The Industry Standard

7000 Series

NEW

Dino-Lite Premier 7000 Series digital microscopes complete with AM35B Professional stand. Suitable for variety of applications and environments including science, engineering work, detailed repair, assembly and quality control, electronic and mechanical industry, antiques and more.

- High 5m Pixel Resolution with Microtouch II Snapshot available for Windows users
- Polarised
- 8 White LEDs with On/Off Control via Software
- 10x ~ 50x, 200x continious magnification (AM7013MZT-X) or 400 x (AM7013MZT4-X)
- Up to 30FPS, 15FPS at 1.3mp
- USB 2.0, as well as compatible with Windows 2000/XP, Vista, 7 and Mac X computers (10.4 or further release)

Mftrs. List No.	Magnification	Order Code	Price Each 1+
AM7013MZT-X	Up to 200x	**209-8873**	736.60
AM7013MZT4-X	Up to 400x	**209-8874**	740.97

Dino-Eye Digital Eyepieces

Dino-Lite Digital Microscope The Industry Standard

AM423X and AM7023

NEW

AM423X

AM7023

The AM423X and AM7023 Dino-Eye digital eyepieces are suitable for enhancing your microscope. Both are suitable for use with traditional 23mm diameter eyeslots, with the AM423X complete with adapters making this also suitable for 30 and 30.5mm eyeslots.
- Available in 1.3 (AM423X) or 5mp resolution (AM7023)
- Up to 30FPS
- Measurement capabilities as well as calibrate for precise results
- Ability to capture various image (bmp, jpeg) formats as well as movies in either WMV or FLV format
- USB 2.0 Connection

Mftrs. List No.	Order Code	Price Each 1+
AM423X	**209-8875**	170.99
AM7023	**209-8876**	290.17

78 Piece Tool Chest

DURATOOL

NEW

This quality tool set is supplied in a powder coated, steel chest with a carry handle and moulded insert trays to keep tools safe and tidy.

Tool Chest Contents:
- 175mm Combination pliers
- 150mm Long Nose pliers
- 150mm Diagonal pliers
- 250mm Water pump pliers
- 8oz Claw hammer
- 200mm Adjastable wrench
- 18mm Knife
- Hex key set: 2.5mm-10mm
- Torx key set : T9-T40
- Slotted: 8 x150,6x100,5x75mm
- Phllips: PH2 x 100,PH1 x 75mm
- Screwdriver handle bit holder
- 1/2" Drive Sockets: 10-11-12-13-14-15-17-19mm
- 1/4" Dr.Sockets: 5-6-7-8-9-10-11-12-13mm
- Combination Spanners 8-10-11-12-13-14-15-16-17-19mm
- 21mm Spark plug socket
- Ratchet handle 1/2"

Mftrs. List No.	Order Code	Price Each 1+	5+
D01914	**210-3231**	39.00	36.90

EFFICIENT REWORK

WITH THE NEW Weller®

WR REWORK SETS

FOR SOLDER AND DESOLDER JOBS WITH INCREASED ENERGY REQUIREMENTS

120 WATTS high-power soldering and desoldering

15% special discount
Available from April-2013 until stocks last

WR 2000 ER

Order code: 2164916

The small set, perfect for soldering and desoldering rework.

1. **WR 2 Power unit**
   2 channel repair station
2. **WP 65**
   30% faster heat up and up to 50% longer tip lifetime
3. **DSX 120**
   120W powered an amazingly fast desoldering iron

WR 3000M ER

Order code: 2164918

The large all rounder set for all requirements on the working bench.

1. **WR 3M Power unit**
   3 channel repair station
2. **DSX 120**
   120W powered an amazingly fast desoldering iron
3. **WP 120**
   120 W soldering iron with fast heat up and high level temperature stability
4. **HAP 200**
   Hot air with safety first (highest security)

Weller®

www.farnell.com/weller

Farnell element14

120 Piece Tool Kit

DURATOOL

NEW

This quality tool set is supplied in a aluminum tool case with a carry handle, ideal for most industries.

Kit Contents:

- 1/4" Dr. Quick release ratchet handle
- 1/4" Dr. Sockets: 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 12, 13, 14mm
- 1/4" Dr. Sliding T-bar, universal joint, extension bar, knurled, 50, 100mm
- 1/4" Dr: Coupler, adaptor
- 1/2" Dr: Quick release ratchet handle
- 1/2" Dr: Sockets: 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 24, 27, 32mm
- 1/2" Dr: Extension bars, 125, 250mm
- 1/2" Dr: Universal joint
- 1/2" Dr: Spark plug socket, 16-21mm
- 1/2" x 3/8" Dr: Sliding T head
- 1/2" x 3M Rubber case tape measure
- Claw hammer
- Gloves
- Fabric rag
- Aluminum tool case, (WxDxH) 450 x 330 x 150mm
- 150mm Diagonal cutting pliers
- 150mm Long nose pliers
- 175mm Combination pliers
- 250mm Water pump pliers
- 4-in-1 Snap ring pliers
- Slotted screwdriver: 5 x 75, 6 x100mm
- Phillips screwdriver: PH1 x 75, PH2 x 100mm
- Auto tester, 100~250V
- Utility knife
- 200mm Torpedo level
- 4 Piece Precision screwdrivers
- 200mm Crimping tool
- 40 Piece Insulated terminals
- Screwdriver bits box
- 1 x Quick bit adaptor
- Hex: 1.5, 2, 2.5, 3, 4, 5, 6mm
- Slotted: 3, 4, 4.5, 5, 5.5, 6, 7mm
- Pozi: PZ0, PZ1, PZ2, PZ3, PZ4
- Phillips: PH0, PH1, PH2, PH3, PH4
- Temper proof Torx: T10-15-20-25-27-30
- Mini hacksaw frame with 2 blades
- 1/4" 3 way flex ratchet screwdriver
- Combination spanners: 8, 10, 11, 12, 13, 14, 17, 19, 22mm
- 250mm Adjustable wrench
- Hex keys:1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 10mm

Mftrs. List No.	Order Code	Price Each 1+	5+
D01919	**210-3236**	134.72	130.58

Component Pre-Forming Tools

DURATOOL

NEW

- Simple to use hand operated component performing tool for precise 90° bending of leads from circuit board components such as resistors, diodes, etc.
- Pitch is easily adjusted via a thumbwheel on the tool
- Pointers enable fast and accurate setting of pitch by alignment with PC8 holes
- TP9 accommodates the same range as the TP8 and adds the ability to crop to length at the same time
- TP12 is similar to the TP9 but is designed to work on miniature components

	TP8	TP12	TP9
Wire capacity diameter	0.25-1mm	0.25-1mm	0.25-1mm
Maximum Length of Bend	32mm	32mm	16mm
Minimum length of bend	9.5mm	9.5mm	6.5mm
Minimum distance of bend from body of component	1mm	1mm	1mm
Maximum component diameter	13mm	13mm	13mm
Maximum length of cut	—	64mm	32mm
Minimum length of cut	—	19mm	16mm
Weight	226g	280g	240g

Description	Mftrs. List No.	Order Code	Price Each 1+
Forming handtool	TP 8	**202-2738**	52.06
Form/Crop handtool, small	TP 9	**202-2739**	72.44
Form/Crop handtool, large	TP 12	**202-2740**	69.05

HL STICK 350W Hot Air Gun

STEINEL

Uk and EU Plug

Small, ergonomically shaped, hot air tool enables work in confined spaces.

NEW

Output (W)	350	Airflow (l/min)	100
Voltage (V)	230 (@ 50 Hz)	Dimensions (H x W x D)	780 x 760 x 2350mm
Temperature Range	400°C (500°C with reduction nozzle)	Weight	572g

663529

Mftrs. List No.	Plug Type	Order Code	Price Each 1+	5+
HL STICK UK	UK	**213-8306**	62.08	60.11
HL STICK EU	EU	**213-8307**	62.08	60.11

3M™ Aluminium 1170 Tape

NEW

3M

- Supplied on a removable liner for easy handling and diecutting
- Available in 15, 19 and 25mm (width), 16.5m rolls
- **Applications:** Typically used for applications requiring excellent electrical conductivity from the application substratethrough the adhesive to the foul backing. Common uses include grounding and EMI shielding in equipment, components, shielded rooms, etc

3M™ 1170 Tape consists of a 1-ounce deadsoft aluminum foil backing and a unique electrically conductive pressure-sensitive acrylic adhesive.

Mftrs. List No.	Order Code	Price Each 1+	5+	10+
1170 TAPE 15MM	**213-5665**	40.69	38.15	35.21
1170 TAPE 19MM	**213-5666**	47.84	44.86	41.40
1170 TAPE 25MM	**213-5667**	66.09	61.96	57.19

1181 Copper Foil with Conductive Adhesive

NEW

3M

3M™ 1181 Tape consists of a 1-ounce dead soft copper foil backing and a unique electrically conductive pressure-sensitive acrylic adhesive.

3M™ 1181Tape is typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to the foil backing.
Common uses include grounding and EMI shielding in equipment, components, shielded rooms, etc. The copper foil backing issolderable and resists oxidation and discoloration.

Dimensions	Mftrs. List No.	Order Code	Price Each 1+	12+	24+
50mm x 16.5m	FE510093332	**177-6398**	99.01	96.14	90.76

1182 Copper Foil Conductive Adhesive on Both Sides

3M

3M™ 1182 Tape consists of a 1-ounce dead soft copper foil backing that is coated on both sides with a unique electrically conductive pressure-sensitive acrylic adhesive.

NEW

3M™ 1182 is typically used to bond two surfaces together, both electrically and physically. An example would be adhering a conductive gasket to a conductive surface as part of the EMI shielding solution for an electronic enclosure.

Dimensions	Mftrs. List No.	Order Code	Price Each 1+	12+	24+
12mm x 16.5m	FE510093357	**177-6401**	22.87	20.38	19.46
25mm x 16.5m	FE510093365	**177-6402**	46.71	41.59	40.12

3M™ Copper Foil 1183 Tape

NEW

3M

- Supplied on a removable liner for easy handling and diecutting
- Available in 12, 19 and 25mm (width), 16.5m rolls
- **Applications:** Typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to the foil backing. Common uses include grounding and EMI shielding in equipment, components, shielded rooms, etc. The tin plating facilitates soldering to the backing and resists oxidation and corrosion

3M™ 1183 Tape consists of a 1-ounce deadsoft tin-plated copper foil backing and a unique electrically conductive pressure-sensitive acrylic adhesive.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
1183 TAPE 12MM	12mm	**213-5669**	38.29	35.90	33.13
1183 TAPE 19MM	19mm	**213-5671**	60.27	56.50	52.15
1183 TAPE 25MM	25mm	**213-5672**	78.89	73.96	68.27

1194 Copper Foil Conductive Adhesive on Both Sides

3M ™1194 Tape consists of a 1-ounce dead soft copper foil backing and an aggressive non conductive pressure-sensitive acrylic adhesive.

Dimensions	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
12mm x 16.5m	FE510053195	177-6404	22.09	19.88	19.17
25mm x 16.5m	FE510052866	177-6405	45.95	40.94	39.47

1245 Embossed Copper Foil

3M™ 1245 Tape consists of an embossed 1-ounce dead soft copper foil backing and an aggressive pressure-sensitive acrylic adhesive The edges of the embossed pattern pressed into the foil cut through the adhesive layer to establish reliable metal-to-metal contact between the backing and the application substrate.

3M™ 1245 Tape is typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to the foil backing.

Common uses include grounding and EMI shielding in equipment, components, shield rooms, etc. The copper foil backing is solderable and resists oxidation and discoloration.

Dimensions	Mftrs. List No.	Order Code	Price Each 1+	5+	10+
50mm x 16.5m	FE510052924	177-6406	75.24	67.05	64.65
12mm x 16.5m	FE510052890	177-6407	18.02	16.05	15.31
25mm x 16.5m	FE510052916	177-6408	38.22	34.05	32.84

3M™ 1345 Tape

- Supplied on a removable liner for easy handling and diecutting
- High tensile strength
- Available in 9, 12, 19 and 25mm (width), 16.5m rolls (12mm = 33m)
- **Applications:** Typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to the foil backing. Common uses include grounding and EMI shielding in equipment, components, shielded rooms, etc. The tin plating on the copper foil backing facilitates soldering and improves resistance to oxidation and discoloration

3M™ 1345 Tape consists of an embossed 1-ounce deadsoft tin-plated copper foil backing and an aggressive pressure-sensitive acrylic adhesive. The edges of the embossed pattern pressed into the foil cut through the adhesive layer to establish reliable metal-to-metal contact between the backing and the application substrate.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
1345 TAPE 9MM	9mm	213-5676	26.20	24.56	22.67
1345 TAPE 12MM	12mm	213-5677	34.84	32.67	30.15
1345 TAPE 19MM	19mm	213-5678	53.00	49.68	45.86
1345 TAPE 25MM	25mm	213-5679	71.78	67.29	62.12

3M™ Polyimide Film Electrical Tape 92

- Silicone thermosetting adhesive
- Available in 6, 9 and 50mm (width), 33m rolls
- **Applications:** Used for high temperature electrical applications in which a tough, thin insulating material is required for wrapping coils, transformers, capacitors, and wire harnesses. It is also used in printed circuit board assembly as a wave solder masking tape

3M ™Polyimide Film Electrical Tape 92 is tough and thin and designed for high-temperature applications such as coils, capacitors and harnesses. UL 510 Flame retardant.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
92 TAPE 6MM	6mm	213-5662	17.04	15.98	14.75
92 TAPE 9MM	9mm	213-5663	25.49	23.90	22.06
92 TAPE 50MM	50mm	213-5664	123.02	118.29	111.84

3M™ Polyimide Film Electrical Kapton Tape 92

Tape is amber with a 1 mil polyimide film backing with a silicone adhesive system for exceptional heat resistance, and may be applied at very low temperatures. Can be imprinted. On a 3 inch plastic core and sold in minicase.

Mftrs. List No.	Order Code	Price Each 1+	10+	36+
92 TAPE 12MM X 33M	330-9691	27.11	25.42	24.08
92 TAPE 19MM X 33M	330-9708	37.66	34.55	33.20
92 TAPE 25MM X 33M	330-9710	52.86	50.28	48.38

3M™ 1205 Polyimide Tape

- 1-mil polyimide Kapton® backing
- Acrylic adhesive
- Flame Retardant
- Solvent resistant backing
- Available in 9, 12 and 19mm (width), 33m rolls
- **Applications:** Used for high-temperature electrical applications in which a tough, thin insulating material that is solvent resistant is required for wrapping coils, transformers, capacitors and wire harneses

3M™ 1205 Tape is a 1-mil polyimide backing with acrylic adhesive. It is designed for high-temperature applications, in which a solvent-resistant backing is required, used on coils, capacitors and wire harnesses.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
1205 TAPE 9MM	9mm	213-5653	24.96	23.40	21.60
1205 TAPE 12MM	12mm	213-5654	32.80	30.74	28.39
1205 TAPE 19MM	19mm	213-5655	50.50	47.35	43.71

3M™ Magnet Tape 1316

0.9mm Thickness

- 0.9mm thickness
- Versatile usage and application
- Pressure sensitive adhesive
- Available in 12, 19, and 25mm, 30.5m rolls

3M™ Magnet Tape is a flexible, polymer bonded product coated on one side with the pressure sensitive adhesive. The high energy magnet tape permanently magnetised with multiple north and south poles along its length. 3M Magnet Tape can be bent, twisted and flexed without loss of magnetic energy.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
1316 TAPE 12MM	12mm	213-5647	137.50	132.21	125.00
1316 TAPE 19MM	19mm	213-5648	185.94	178.79	169.04
1316 TAPE 25MM	25mm	213-5649	252.78	243.06	229.80

3M™ Magnet Tape 1317

1.5mm Thickness

- 1.5mm thickness
- Versatile usage and application
- Pressure sensitive adhesive
- Available in 12, 19, and 25mm, 30.5m rolls

3M™ Magnet Tape is a flexible, polymer bonded product coated on one side with the pressure sensitive adhesive. The high energy magnet tape permanently magnetised with multiple north and south poles along its length. 3M Magnet Tape can be bent, twisted and flexed without loss of magnetic energy.

Mftrs. List No.	Tape Width	Order Code	Price Each 1+	5+	10+
1317 TAPE 12MM	12mm	213-5650	152.62	146.75	138.75
1317 TAPE 19MM	19mm	213-5651	200.36	192.65	182.15
1317 TAPE 25MM	25mm	213-5652	273.70	263.17	248.82

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Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.
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FLUKE.

SEE BEYOND TEMPERATURE

The NEW Fluke VT02 Visual IR Thermometer.

Fluke does one thing better than any other measurement company. We listen to our customers. This is what we heard: **First,** develop a low-cost solution that combines the convenience of an IR thermometer with the visual advantage of a thermal imager. **Plus,** make it easy to find hot and cold spots while scanning across a surface, and if possible, make it so we can blend both an infrared and digital image.

Done.

Order code: 2254306

www.farnell.com/fluke

Farnell element14

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190 Series II Scopemeters

FLUKE

Introducing the Fluke 190 Series II portable oscilloscopes with two or four independent isolated input channels, an IP51 dustand drip-proof rating, and a CAT III 1000 V / CAT IV 600 V safety rating. Choose from 60MHz to 500 MHz bandwidth models.

- 2 or 4 independent floating isolated inputs, up to 1000V
- High-speed sampling: Up to 2.5 GS/sec
- Deep memory: 10,000 points per trace waveform capture
- CAT III 1000 V/CAT IV 600 V rated for safety in high voltage environments
- Up to 7 hours of battery operation, standard
- Isolated USB host port for direct data storage to a USB memory device; USB device port for easy PC communication
- 3 year warranty
- 1 year warranty on accessories

Included accessories:
Mains adapter/battery charger, Li-ion battery, 10:1 Probe set (1 red, 1 blue, 1 grey, 1 green) including hookclips, ground leads with minialligator clips, ground springs and probe-tip insulation sleeves, FlukeView scopemeter demo software package, USB interface cable for PC connectivity and Users manual on CD-ROM.

SCC290 Kit contents:
FlukeView software and C290 carrying case.

2 Channel	190-502	190-202	190-102	190-062
4 Channel		190-204	190-104	
Bandwidth	500MHz	200MHz	100MHz	60MHz
LCD Display	153mm full color LCD with LED backlight			
Wavefrom Compare	Visual Referance			
Maximum Record Length	10000 samples per channel (x4) in scope mode			
	30000 points per input in ScopeRecord™ roll mode			
Max. floating voltage	CAT III 1000 V, CAT IV 600 V (Max. voltage between any contact and earth-ground voltage level)			
Input sensitivity	2 mV/div to 100 V/div			
Glitch capture	8 ns peak detect on each channel			
Time base range	5 ns/div to 4 s/div. in a 1-2-4-sequence. Slower time/division settings using ScopeRecord Roll mode.			
Modes	Automatic Connect-and-View™, free run, single shot, edge, delay, dual slope, video, video line, selectable pulsewidth (channel A only), N-cycle			
Wavefrom Mathematics	One mathematical operation on 2 input channels: add/subtract/multiply; all with scalable resultant; X-Y-mode; Frequency Spectrum using FFT analysis			
Recording modes	Single sweep, continuous roll, Start-on-Trigger (through any channel) Stop-on-Trigger (through any channel)			
Memory	Two multiple input TrendPlot records can be saved internally for later recall and analysis. Direct storage on external fl ash memory drive through USB host port.			
True RMS multimeter	999 count, Volts, Amps, Ohms, Temperature			
Safety certified (EN61010-1)	1000V CAT III / 600V CAT II (instrument and included accessories)			
Battery (installed)	BP291 Li-ion			
Line Power	Mains adapter/battery charger included			
Interface	Two USB ports provided. Ports are fully insulated from instrument's fl oating measurement circuitry. USB-host port directly connects to external fl ash memory drive for storage of waveform data, measurement results, instrument settings and screen copies. A mini-USB-B is provided which allows for interconnection to PC for remote control and data transfer under PC-control.			

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
UK Power Adaptor - 2 Channel			
FLUKE-190-062 UK	60MHz	**189-9059**	2,351.00
FLUKE-190-102 UK	100MHz	**189-9061**	2,925.00
FLUKE-190-202 UK	200MHz	**189-9063**	3,322.00
FLUKE-190-502/UK	500MHz	NEW **227-4708**	3,557.00
FLUKE-190-502/UK/S	Fluke 190-502 UK Plug with Accessories	NEW **227-4710**	3,557.00
European Power Adaptor - 2 Channel			
FLUKE-190-062 EU	60MHz	**189-9060**	2,351.00
FLUKE-190-102 EU	100MHz	**189-9062**	2,925.00
FLUKE-190-202 EU	200MHz	**189-9064**	3,322.00
FLUKE-190-502/EU	500MHz	NEW **227-4709**	3,557.00
FLUKE-190-502/EU/S	Fluke 190-502 Euro Plug with Accessories	NEW **227-4712**	3,557.00
UK Power Adaptor - 4 Channel			
FLUKE-190-204/UK	200MHz	**185-8007**	3,702.00
FLUKE-190-104/UK	100MHz	**185-8009**	3,218.00
European Power Adaptor - 4 Channel			
FLUKE-190-204/EU	200MHz	**185-8006**	3,702.00
FLUKE-190-104/EU	100MHz	**185-8008**	3,218.00
Accessories			
BP291	Li-ion Battery	**185-8010**	251.00
VPS410-R	10:1 Voltage Probe Set (Red)	**185-8011**	156.00
VPS410-B	10:1 Voltage Probe Set (Blue)	**185-8012**	156.00
VPS410-G	10:1 Voltage Probe Set (Grey)	**185-8013**	156.00
VPS410-V	10:1 Voltage Probe Set (Green)	**185-8015**	156.00

Mftrs. List No.	Bandwidth	Order Code	Price Each 1+
Accessories			
VPS420-R	100:1 High Voltage Probe (Red/Black)	**185-8016**	196.00
C290	Hard Shell Carrying Case	**185-8017**	170.00
SCC290	Software and Carrying Case Kit	**185-8018**	324.00
RS400	Probe Replacement Set for VPS410	**185-8019**	66.00
AS400	Probe Extension Set for VPS410	**185-8020**	84.00
SW90W	FlukeView ScopeMeter Software	**431-4566**	260.00

Digital Oscilloscope

FLUKE

CALIBRATION SERVICES

ScopeMeter 124

H=232,
W=115,
D=50mm
Weight=1.2kg

- Dual-input 40 MHz digital oscilloscope
- Two 5,000 counts true-RMS digital multimeters
- A dual-input TrendPlot™ recorder
- Connect-and-View™ trigger simplicity for hands-off operation
- Sheilded test leads for oscilloscope, resistance and continuity measurements
- 10:1 Voltage Probe included for high frequency measurements
- Up to 7 hours battery operation
- 600 V CAT III safety certified
- Optically isolated RS-232 interface
- Rugged, compact case

The compact ScopeMeter 124 is the rugged solution for industrial troubleshooting and installation applications. It's a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one offer affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control and power systems.

Bandwidth	40MHz	True RMS multimeter	5000 counts, dual input
Sample rate	25 MS/s	Connect and view triggering	Yes
Input sensitivity	5 mV - 500 V/div	Video triggering with line count	Yes
Timebase range	10 ns/div to 1 min/div	Dual input trendplot	Yes
Inputs and digitisers	2	Memory for screens/set ups	20
Max record length	512 min/max points per input	Line power	Adapter/battery charger included
Glitch capture	40 ns	Batteries	7 hours NiMH
Scope measurements	26 automatic		

Included accessories
PM8907 line adapter/charger, STL120 shielded test leads set, AC120 alligater clips, HC120 hook clips, BB120 shielded BNC adapter, BP130 NiMH battery pack, VPS40 voltage probe

Mftrs. List No.	Order Code	Price Each 1+
UK Power Adaptor		
FLUKE 124	**438-3450**	1,336.00
European Power Adaptor		
FLUKE 124	**444-8662**	1,336.00
Accessories		
C101 Carry Case	**947-9783**	44.00
40MHz 10:1 Voltage Probe	NEW **190-8608**	90.00
Industrial Shielded Test Lead Set	NEW **190-8609**	146.00

Mftrs. List No.	Order Code	Price Each 1+
Accessories		
SCC120E Kit	**908-149**	355.00

TRMS Digital Multimeters

CALIBRATION SERVICES

FLUKE

True RMS

114 and 115

W=84 H=167 D=46mm. Weight 550g

The **114 Electrical Multimeter** is ideal for electrical troubleshooting and straightforward "go/no-go" testing in residential/commercial electrical testing. It has all the basic functions plus a special feature to prevent false readings caused by ghost voltage.

The **115 Field Service Multimeter** is optimised for electrical and electronic testing in field service, industrial, and applications where
more than basic functionality (such as measurement of ac/dc current) simplifies working.

Continues on next page

- True RMS AC measurements
- Large 6000 count display with white LED backlight
- Analogue bargraph
- Auto/Manual ranging
- MIN/MAX/AVG functions
- Data Hold
- Low battery indication
- Compact case with removable holster
- CAT III 600 V
- 400 hours operation from supplied 9V alkaline battery
- Supplied with user manual and TL75 test leads

Feature	114	115
AutoVolt: automatic ac/dc selection	●	
LoZ: low input impedance to prevent ghost voltages	●	
AC/DC Voltage Measurements	●	●
AC/DC Current Measurements		●
Resistance / Continuity	●	●
Frequency and Capacitance		●
Diode Test		●

	Maximum	Max. Resolution	Best Accuracy 114	Best Accuracy 115
DC Voltage	600V	1mV	±(0.5%+2)	±(0.5%+2)
AC Voltage	600V	1mV	±(1.0%+3)	±(1.0%+3)
DC Current	10A	1mA		±(1.0%+3)
AC Current	10A	10mA		±(1.5%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)	±(0.9%+1)
Capacitance	10mF	1nF		±(1.9%+2)
Frequency	50kHz	0.01Hz		±(0.1%+2)

Description	Mfrs. List No.	Order Code	Price Each 1+
TRMS DMM	114	**127-4598**	126.00
TRMS DMM	115	**127-4599**	149.00
Calibrated Models			
TRMS DMM Standard Calibration	114 + STD CAL	**225-2689**	149.00
TRMS DMM Standard Calibration	115 + STD CAL	**225-2690**	174.00
TRMS DMM UKAS Calibration	114 + UKAS CAL	**225-2700**	173.00
TRMS DMM UKAS Calibration	115 + UKAS CAL	**225-2701**	197.00
Accessories			
Carry Case	C50	**424-006**	28.00
Magnetic Hanger	TPAK	**302-9578**	28.00
Test Lead Set	TL223-1	**189-5826**	50.00

Digital Multimeter with non-contact voltage

FLUKE

CALIBRATION SERVICES

117

W=84 H=167 D=46mm. Weight 550g

- True RMS AC measurements
- Large 6000 count display with white LED backlight
- Analogue bargraph
- VoltAlert™ Technology for integrated non-contact voltage detection
- Current measurement 20A (30 seconds momentary; 10A continuous)
- Resistance, continuity, frequency and capacitance measurements
- LoZ: low input impedance to eliminate ghost (stray) voltage to make more accurate measurements
- AutoVolt: automatic ac/dc selection
- Auto/Manual ranging
- MIN/MAX/AVG functions
- Data Hold
- Low battery indication
- Diode Test
- Compact case with removable holster
- CAT III 600 V
- 400 hours operation from supplied 9V alkaline battery
- Supplied with user manual and TL75 test leads

The ideal meter for demanding settings like commercial buildings, hospitals and schools. The compact design makes it easy to hold and use one-handed. Integrated VoltAlert™ Technology allows testing for non-contact voltage directly from the meter to help get the job done faster.

The **Electrician's Combo kit** (117/322) pairs the new Fluke 117 DMM with a Fluke 322 clamp meter and is the perfect solution to meet the demands of Electrical Professionals. The combo kit includes:

- 117 True-rms digital multimeter with non-contact voltage detection
- 322 Compact clamp meter (600V ac/dc, 400A ac, 400Ω
- 4 mm lantern tip probe and test lead set
- ToolPak Magnetic Meter Hanging Strap
- C115 Deluxe carrying case with shoulder strap

	Maximum	Max. Resolution	Best Accuracy
DC Voltage	600V	1mV	±(0.5%+2)
AC Voltage	600V	1mV	±(1.0%+3)
DC Current	10A	1mA	±(1.0%+3)
AC Current	10A	10mA	±(1.5%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)
Capacitance	10mF	1nF	±(1.9%+2)
Frequency	50kHz	0.01Hz	±(0.1%+2)

Description	Mfrs. List No.	Order Code	Price Each 1+
Multimeter	117	**127-4602**	175.00
Combo Kit	117/322 KIT	**127-4603**	245.00
Calibrated Models			
Fluke 117 with Standard Calibration	117 + STD CAL	**225-2692**	190.00
Fluke 117 with UKAS Calibration	117 + UKAS CAL	**225-2704**	214.00
Accessories			
Carry Case	C50	**424-006**	28.00
Magnetic Hanger	TPAK	**302-9578**	28.00
Test Lead Set	TL223-1	**189-5826**	50.00

Digital Multimeters

FLUKE

170 Series

H=183, W=90, D=43

CALIBRATION SERVICES

GREAT SELLER

The three models of the new 170 Series are the new benchmarks for the general-purpose mulitmeters. There three models: the 175, 177 and the 179 set the standard with a combination of precision, features, ease-of-use, safety and reliability.

All models offer true RMS AC voltage and current readings, 6000-count resolution, min-max-average recording, as well as frequency and capacitance ranges. Despite all of these and many other useful features, the 170 Series remains easy to use. The ergonomic case with integrated holster protects the units in rough and tough environments. To change the batteries, the case does not have to be opened as access to the batteries is through an easy to open battery door. All inputs are protected to **EN61010-1 CAT IV 600V/CAT 111 1000V**.The Fluke 170 Series is supplied with TL75 test leads, installed 9V battery and user manual and comes with Fluke's unique lifetime warranty.

Features	175	177	179
True-rms measurements	AC	AC	AC
Digital display counts, updates 4 times per second	6000	6000	6000
Display backlight		●	●
Analog bargraph/segments, updates 40 times per second	33-segments	33-segments	33-segments
Auto and manual ranging	●	●	●
Display hold and auto hold	●	●	●
Min-max-average recording mode with min/max alert	●	●	●
Temperature readings (bead thermocouple probe included)			●
Smoothing mode allows filtering of rapidly changing inputs	●	●	●
Audible continuity and diode test	●	●	●
Test lead alert warns for improper connection of test leads	●	●	●
Unsafe voltage alert warns for voltages above 30V	●	●	●
Low battery indication	●	●	●
Ergonomic case with integrated holster	●	●	●
Easy battery exchange without opening the complete case	●	●	●
Selectable sleep mode preserves battery life	●	●	●
Warranty	Lifetime	Lifetime	Lifetime
EN 61010-1 safety rating on all inputs	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V

Accuracies are best accuracies for each function

Battery life	Alkaline, 200 hrs typical
Weight	420g
Warranty	Lifetime

Mftrs. List No.	Order Code	Price Each 1+
FLUKE 175EGFID	**355-8678**	193.00
FLUKE 177	**355-8680**	210.00
FLUKE 179	**355-8691**	233.00
Calibrated Models		
Fluke 175 with Standard Calibration	**225-2696**	210.00
Fluke 177 with Standard Calibration	**225-2698**	226.00
Fluke 179 with Standard Calibration	**225-2699**	248.00
Fluke 175 with UKAS Calibration	**225-2708**	239.00
Fluke 177 with UKAS Calibration	**225-2709**	255.00
Fluke 179 with UKAS Calibration	**225-2710**	277.00
Accessories		
Carry Case - C101	**947-9783**	44.00

FREE GLOBAL LEGISLATION SUPPORT
RoHS, REACH, WEEE, ErP, Batteries Directive - latest updates, free white papers and live online Q&A at
element14.com/legislation

Digital Multimeter

80 Series V

- True-RMS voltage and current for accurate measurements on non linear signals
- Large display with analog bargraph and 2 level bright white backlight
- Auto and manual ranging for maximum flexibility
- Relative mode to remove test lead resistance from low ohms measurements
- Min-Max-Average recording with Min/Max Alert to capture variations automatically
- Touch Hold to capture stable readings avoiding noisy signals
- Audible continuity, diode test and duty cycle
- Input Alert
- Classic design with new removable holster with built in test lead and probe storage
- Improved selectable sleep mode for long battery life
- Easy battery and fuse exchange without opening the complete case
- Meets EN61010-031 safety requirements

87-5 extra features:

- Selectable filter for accurate voltage and frequency measurements on motor drives
- Built-in thermometer
- Peak capture to record transients as fast as 250µs

Fluke 87-5/E2K/EUR Industrial Electrician Combo Kit includes:

- 0.5 m heat resistant silicone test leads
- Removeable test probes with 4mm of exposed metal for use on industrial circuits
- Retractable long reach alligator clips
- Magnetic hanger to position and hold meter to steel surfaces
- Temperature probe
- Durable carrying case

H80M Holster

- Yellow holster for all 80 series DMMs (new as well as old)
- Hanging magnet
- Hook and loop straps
- General purpose hanger

The new Fluke 80 Series V has improved measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, in plant automation, power distribution, and electro-mechanical equipment. The 80 Series V operates very similar to the classic 80 Series, but with more problem solving power, safety, convenience and impact protection.

		83-5		87-5	
Functions	**Maximum range**	**Max resolution**	**Accuracy**	**Max resolution**	**Accuracy**
Voltage DC	1000V	0.1mV	±(0.1%+1)	10µV	±(0.05%+1)
Voltage AC	1000V	0.1mV	±(0.5%+2)	10µV	±(0.7%+2)
Current DC	10A	0.1µV	±(0.4%+2)	0.01µ	±(0.2%+2)
Current AC	10A	0.1µV	±(1.2%+2)	0.01µ	±(1.0%+2)
Resistance	50MΩ	0.1Ω	±(0.4%+1)	0.01Ω	±(0.2%+1)
Conductance	60nS	0.01nS	±(1.0%+10)	0.001nS	±(1%+10)
Capacitance	9999µF	0.01nF	±(1.0%+2)	0.01nF	±(1%+2)
Frequency	>200kHz	0.01Hz	±(0.005%+1)	0.01Hz	±(0.005%+1)
Temperature	-200 to 1090°C			0.1°C	1.0% 2.2°C or 2%
80BK temperature probe	-40 to 260°C				

Mftrs.		Price Each
List No.	**Order Code**	1+
FLUKE-83-5/EUR	**189-5830**	323.00
FLUKE-87-5/EUR	**189-5831**	395.00
FLUKE-87-5/E2K/EUR Kit	**189-5811**	447.00
Calibrated Models		
Fluke 87 V with Standard Calibration	**FLUKE-87-5/EUR + STD CAL**	225-2695
Fluke 87 V with UKAS Calibration	**FLUKE-87-5/EUR + UKAS CAL**	225-2707
Accessories		
H80M Holster	**800-2223**	29.00
C101 Carry Case	**947-9783**	44.00

Digital Logging Multimeters

Fluke 287 & Fluke 289

H=254 W=194 D=76mm. Weight 1kg

High performance industrial logging multimeters. Log data and display it graphically on the large display.

- Large 50,000 count 320x240 dot matrix display
- Logging function with TrendCapture for easy review of logged data
- Multiple readings per display
- True RMS measurements (AC and AC+DC)
- Info button for convenient on-board help
- Optical USB Communications interface for easy data transfer
- Internal memory allows up to 180 hours of logging
- Current measurement to 20A (30 seconds), 10A continuous
- Peak capture (records transients as fast as 250µs
- Min/Max and Average functions with Time Stamp
- Protected to IP54
- **UL**, **CSA** and **TUV** listed
- Meets EN61010-031 safety requirements

Fluke 289 Additional Features:

- Low pass filter for motor drive measurements
- Low impedance function prevents false "ghost voltage" readings
- 50Ω range for motor winding and low ohm measurements

Function	**Measuring Ranges**	**Resolution**	**Accuracy**
VDC	50mV to 1kV	1µV	
VAC	50mV to 1kV	1µV	
ADC		0.01µA	
AAC		0.01µA	
Resistance	500ohm to 500Mohm	0.01Ω	
Conductance	50nS	0.01nS	±(1.0%+10d)
Capacitance	1nF to 100mF	0.001nF	
Frequency	99.999Hz to 999.99kHz	0.01Hz	
Temperature	°C	0.1°C	(1% + 1°C)

Accuracies are best accuracies for each function.
Supplied with TL71 silicone test leads, probe holder, 6x AA batteries (installed) and manual

289FVF - FlukeView Combo Kit: contains Fluke 289 and accessories as above plus; alligator clips, 80BK thermocouple, FlukeView forms software, data cable and a soft carry case.

287 Test Lead Kit is designed for electronics designers, test and service technicians. The kit includes: spring tipped probes, micro-grabbers, mini alligator clips, leads and couplers.

289 Test Lead Kit is designed for high-end industrial users. The kit includes: SureGrip alligator clips, SureGrip grabbers, SureGrip hook clips, Suregrip industrial test probes, magnetic hanger, temperature adaptor with K-type thermocouple, soft carry case. Rated to 1000V CAT III.

	Mftrs.		Price Each
Description	List No.	**Order Code**	1+
Multimeter	FLUKE-289/EUR	**189-5816**	469.00
Multimeter	FLUKE-289/FVF/EUR	**189-5817**	539.00
FlukeView Combo Kit	FLUKE-289/FVF/EUR	**189-5817**	539.00
Calibrated Models			**Price Each**
Fluke 289 with Standard Calibration	FLUKE-287/EUR + STD CAL	**225-2693**	425.00
Fluke 289/FVF with Standard Calibration	FLUKE-289/EUR + STD CAL	**225-2694**	456.00
Fluke 289 with UKAS Calibration	FLUKE-287/EUR + UKAS CAL	**225-2705**	448.00
Fluke 289/FVF with UKAS Calibration	FLUKE-289/EUR + UKAS CAL	**225-2706**	480.00
Accessories			**Price Each**
Test Lead Kit	TLK287	**150-3745**	120.00
Test Lead Kit	TLK289	**150-3746**	120.00
Soft Case	FLUKE C280	**177-2099**	49.00

Fluke 233 Remote Display Digital Multimeter

The first Fluke digital multimeter with a detachable display is here. The 233 wireless remote DMM allows maintenance professionals to address an age-old problem - display positioning.
The new Fluke 233 can be used for even the most common meter measurements and is especially suited for those situations where display viewing is challenging

- True-rms ac voltage and current for accurate measurements on non-linear signals
- Measure up to 1000 V ac and dc
- Measure up to 10 A (20 A for 30 seconds)
- 10,000 µF capacitance range
- Frequency to 50 kHz
- Built in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument
- Resistance, continuity and diode test

Fluke 233 Remote Display Multimeter Includes: Getting Started Manual (Printed), AA Batteries installed, Test leads, AC72 Alligator clips, 80BK-A Temperature Probe, CD-ROM (user manual & technical notes and application images)

Wireless Range	30 Ft	Size (H x W x L) cm	5.3 x 9.3 x 19.3
Safety Rating	CAT III 1000 V CAT IV 600 V	Weight	604 g

Mftrs.		Price Each
List No.		1+
FLUKE 233	**177-2092**	248.00

320 Series - Clamp Meters

FLUKE

NEW

The Fluke 323, 324 and 325 Clamp Meters are designed to perform in the toughest environments and provide noise-free, reliable results users can trust to confidently diagnose problems. True-rms measurements and optimized ergonomics make the 320 Series Clamp Meters the best general troubleshooting tools for commercial and residential electricians.

- 400 A ac current measurement (ac and dc current; 325 only)
- 600 V ac and dc voltage measurement
- True-rms ac voltage and current for accurate measurements on non-linear signals
- Resistance measurement to up to 40 kΩ with continuity detection
- Temperature and capacitance measurement (324 and 325 only)
- Frequency measurement (325 only)
- Slim, ergonomic design
- Large, easy to read backlight display (324 and 325 only)
- CAT IV 300 V/CAT III 600 V safety rating
- Hold button
- Two-year warranty
- Soft carrying case

	FLUKE-323	FLUKE-324	FLUKE-325
AC Current	400A		40A, 400A
DC Current	–	–	40A, 400A
AC Voltage		600V	
DC Voltage		600V	
Resistance		400ohm, 4kohm	400ohm, 4kohm, 40kohm
Continuity	≤70ohm		≤30ohm
Capacitance	–		100µF to 1000µF
Frequency	–	–	5Hz to 500Hz
Backlight	–	Yes	Yes
Data Hold	Yes	Yes	Yes
Contact Temperature	–	-10°C to +400°C	
Dimensions		207 x 75 x 34mm	
Weight	265g	208g	283g

Kit Contents: Clamp meter, test leads, soft case, and users manual.

Mftrs. List No.	Description	Order Code	Price Each 1+
FLUKE-323	Clamp Meter, 400A	**221-5018**	101.00
FLUKE-324	Clamp Meter, 40A/400A	**221-5021**	118.00
FLUKE-325	Clamp Meter, 40A/400A	**221-5022**	159.00
Accessories			
TL223-1	Electrical Test Lead Kit	**189-5826**	50.00

Fluke 381 Remote Display True-rms AC/DC Clamp Meter with iFlex

FLUKE

True RMS

UNIQUE DESIGN

CALIBRATION SERVICES

The new Fluke 381 does everything you would expect from a clamp meter, and then lets you remove the display for even more flexibility. Now one technician can do jobs that used to require two people; clamp the Fluke 381 around a conductor, remove the display and walk across the room to operate controls or remove protective equipment, all while watching real-time readings. The new iFlex flexible current probe (included) expands the measurement range to 2500 A ac while providing increased display flexibility, ability to measure awkward sized conductors and improved wire access.

Features

- Wireless technology allows the display to be carried up to 30 ft. away from the point of measurement for added flexibility without interference with measurement accuracy
- iFlex flexible current probe expands the measurement range to 2500 A ac while providing increased display flexibility, ability to measure awkward sized conductors and improved wire access.
- CAT IV 600V, CAT III 1000 V safety rating
- Integrated low pass filter and state of the art signal processing allows for use in noisy electrical environments while providing stable readings
- Proprietary inrush measurement technology to filter out noise and capture motor starting current exactly as the circuit protection sees it.
- Ergonomic design fits in your hand and can be used while wearing personal protective equipment.
- The removable magnetic display can be conveniently mounted where it is easily seen
- Radio transmitter automatically turns off when the display is connected to the meter
- Large, easy to read, backlight display automatically sets the correct measurement range so you do not need to change switch positions while taking a measurement.
- Three year warranty
- Soft carrying case

Fluke 381	Range	Resolution	Accuracy
AC Current via Jaw	1000 A	0.1 A	2% ± 5 digits
AC Current via iFlex	2500 A	0.1 A	3% ± 5 digits
DC Current	1000 A	0.1 A	2% ± 5 digits
AC Voltage	1000 V	0.1 V	1.5% ± 5 digits
DC Voltage	1000 V	0.1 V	1% ± 5 digits
Resistance	60000 Ω	0.1 Ω	1% ± 5 digits
Frequency	500 Hz	0.1 Hz	0.5% ± 5 digits
True-rms		X	
Continuity		X	
Hold		X	
Backlight		X	
Min/Max		X	
Inrush		X	
Low Pass Filter		X	
Removable wireless display		X	
18 in iFlex Flexible Current Probe		Included	
10 in iFlex Flexible Current Probe		Accessory	
Wire Capacity		750 MCM or 2-500 MCM	
Safety Rating		CAT III 1000V, CAT IV 600V	

Mftrs. List No.	Order Code	Price Each 1+
FLUKE 381	**182-7174**	437.00

Fluke CNX 3000 Wireless System Series

FLUKE

NEW

The new Fluke wireless troubleshooting system shows live measurements from multiple modules simultaneously and remotely on a single screen. This customisable tool set, built with the durability, reliability and quality as expected from Fluke tools. The wireless multimeter displays readings from up to 3 wireless modules, plus the meter. The laptop displays readings from up to 10 modules. Both from up to 20 meters away! Wireless enabled modules measure AC voltage, temperature and AC current. Choose a standard true-rms clamp or flexible true-rms clamp to measure AC current. Mix and match modules to suit unique measurement needs.

- Take multiple measurements simultaneously saving time and money
- Use the log function on the modules to isolate intermittent events or record signal fluctuations
- Ability to record multiple sessions before downloading, whilst stored in csv format for easy viewing
- Capture readings at different intervals, ranging from one second to one hour
- No more run-around. See up to four measurements (DMM and 3 modules) on one screen, same place, same time
- Capture up to 65000 sets of min/max/avg readings over single or multiple logging sessions (each session is time stamped)
- One time set up, set back and read as many times as required
- Identify up to 10 placed modules with meter or PC and choose only the ones needed
- Easy see backlit displays in dark or or dimly lit work enviroments
- Auto or manual ranging
- Integrated holster protects the meters, while probe holders keep accessories organised

Wireless Multimeter

FLK-CNX 3000

- 1000V DC or AC RMS
- Update rate: 4/sec
- Volts, Amps, Ohms : 6000 counts
- Frequency: 10000 counts
- Capacitance: 1000 counts
- 2.4 GHz ISM band with a 20m range
- Temperature: -10 to 50°C (Operating), -40 to 60°C (Storage)
- IP54 rating
- **CSA, PCC and CE certifications**
- 300 hours minimum battery life (3 x AA)

iFlex True-rms AC Current Clamp Module

FLK-CNX I3000

- 0.5 A to 2500 A AC
- 0.1A resolution
- Accuracy : 3% ± 5 digits
- Crest Factor: 3.0 at 1100A, 2.5 at 1400A, 1.42 at 2500A (add 2% for C.F > 2)
- LCD : 3 1/2 digits with backlight
- Adjustable log rate (1 sec minimum, adjustable via PC or front panel)
- Record to to 65000 readings
- 2.4 GHz ISM band with 20m range
- Temperature: -10 to 50°C (Operating) and -40 to 60°C (Storage)
- EMC: EN 61326-1:2006
- EN/IEC 61010-1:2010 to 1000 V Measurement Category (CAT) III, 600 V Measurement Category (CAT) IV, EN/IEC 61010-2-030:2010, EN/IEC 610101-2-031:2002, EN/IEC 61010-2-032:2002 safety compliance
- CAT IV 600 V, CAT III 1000 V safety rating
- IP42 rating
- 254mm jaw opening

Continues on next page

True-rms AC Current Clamp Module

FLK-CNX A3000

- 0.5 A to 400.0 A
- 0.1A resolution
- Accuracy: 400.0 A, 2% ±5 digits (10 Hz to 100 Hz), 2.5% ± 5 digits (100 Hz to 500 Hz)
- Crest factor (50/60 Hz): 3 at 500A, 2.5 at 600A, 1.42 at 1000A, (add 2% for C.F. > 2)
- 3 1/2 digits (with backlight)
- Records up to 65000 readings
- 2.4 Ghz ISM band and 20m range
- Temperature: -10 to 50°C (operating), -40 to 60°C (storage)
- EN 61326-1:2006 EMC
- EN/IEC 61010-1-030:2010 to 600 V Measurement Category (CAT) III, EN/IEC 61010-2-030:2010, EN/IEC 61010-032:2002 safety compliance
- CAT III 600 V Safety rating
- CSA, FCC T68-FWCS IC:6627A-FWCS certifications
- IP30 rated
- 34mm jaw opening
- 400 hours battery life (2 x AA)

AC Voltage Module

FLK-CNX V3000

- Up to 1000V AC range
- 3 1/2 digits, 6000 counts, updates 4/sec
- Records up to 65000 readings
- 2.4 GHz ISM band with 20m range
- Temperature : -10 to 50°C (Operating), -40 to 60°C (Storage)
- **CSA, FCC T68-FWCS IC:6627A-FWCS Certifications**
- **CAT IV 600 V, CAT III 1000 V Safety rating**
- IP42 rating
- Battery life: 400 hours (2 x AA)

K-Type Temperature Module

FLK-CNX T3000

- K-type: -200 to 1372°C
- 0.1°C resolution
- Accuracy : ± (0.5% + 0.3°C) counts
- K-type mini input terminals
- LCD : 3 1/2 digits with backlight
- 400 hours battery life (2 x AA)
- Up to 65000 recordings
- 2.4 GHz ISM band with 20m range
- Temperature: -10 to 50°C (Operating), -40 to 60°C (Storage)
- EN 61326-1:2006
- CAT I per IEC/EN 61010-1:2010, EN/IEC 61010-2-030:2010 Safety compliance
- CSA, FCC T68-FWCS IC:6627A-FWCS certifications
- IP30 rating
- Dimensions: 165 x 635 x 140mm
- Weight: 220g

Kits

The Fluke CNX pc3000 PC Adapter and Software help you understand the measurements.

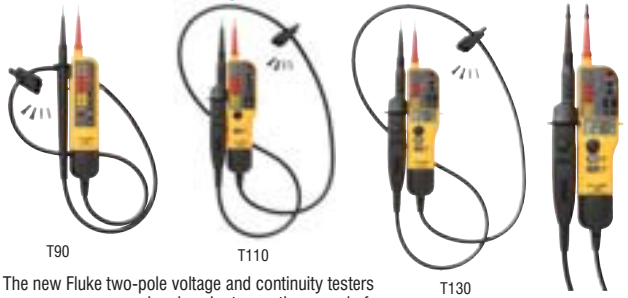
- Wirelessly collects up to 65,000 sets of time stamped min/max/avg readings from CNX remote modules.

Model	Includes	Mftrs List No.
CNX 3000 General Maintenance System	Fluke CNX 3000 Wireless Multimeter, Fluke CNX v3000 AC Wireless Voltage Module, Fluke CNX i3000 iFlex AC Wireless Current Module, iFlex i2500-10 Flexible Current Probe, Fluke CNX pc3000 Wireless PC Adapter and Software, TL224 Test Leads, TL175 Test Leads, AC175 Alligator Clips, AC285 Alligator Clips, Two (2) Magnetic Hanging Straps and Soft Carrying Case	FLK-CNX 3000 GM
CNX 3000 Industrial Maintenance System	Fluke CNX 3000 Wireless Multimeter, Fluke CNX v3000 AC Wireless Voltage Module, Three (3) Fluke CNX i3000 iFlex AC Wireless Current Modules, Three (3) iFlex i2500-10 Flexible Current Probes, Fluke CNX pc3000 Wireless PC Adapter and Software, TL224 Test Leads, TL175 Test Leads, AC175 Alligator Clips, AC285 Alligator Clips and Four (4) Magnetic Hanging Straps	FLK-CNX 3000 IND
CNX 3000 HVAC System	Fluke CNX 3000 Wireless Multimeter, Fluke CNX a3000 AC Wireless Current Clamp Module, Fluke CNX t3000 K-Type Wireless Temperature Module, Fluke CNX pc3000 Wireless PC Adapter and Software, TL175 Test Leads, AC175 Alligator Clips, 80PK-1 K-Type Bead Thermocouple, Magnetic Hanging Strap and Soft Carrying Case	FLK-CNX 3000 HVAC
CNX t3000 Kit	Fluke CNX 3000 Wireless Multimeter, Fluke CNX t3000 K-Type Wireless Temperature Module, TL175 Test Leads, AC175 Alligator Clips, 80PK-1 K-Type Bead Thermocouple, Magnetic Hanging Strap and Soft Carrying Case	FLK-CNX T3000 KIT
CNX i3000 Kit	Fluke CNX 3000 Wireless Multimeter, Fluke CNX i3000 iFlex AC Wireless Current Module, iFlex i2500-10 Flexible Current Probe, TL175 Test Leads, AC175 Alligator Clips, Magnetic Hanging Strap and Soft Carrying Case	FLK-CNX I3000 KIT
CNX a3000 Kit	Fluke CNX 3000 Wireless Multimeter, Fluke CNX a3000 AC Wireless Current Clamp Module, TL175 Test Leads, AC175 Alligator Clips and Soft Carrying Case	FLK-CNX A3000 KIT
CNX v3000 Kit	Fluke CNX 3000 Wireless Multimeter, Fluke CNX v3000 AC Wireless Voltage Module, TL224 Test Leads, TL175 Test Leads, AC175 Alligator Clips, AC285 Alligator Clips, Magnetic Hanging Strap and Soft Carrying Case	FLK-CNX V3000 KIT

Mftrs. List No.	Description	Order Code	Price Each 1+
FLK-CNX 3000	Wireless Multimeter	**227-9914**	259.00
FLK-CNX I3000	iFlex™ True-rms Current Clamp Module	**227-9916**	129.00
FLK-CNX A3000	True-rms AC Current Clamp Module	**227-9917**	109.00
FLK-CNX V3000	AC Voltage Module	**227-9918**	109.00
FLK-CNX T3000	K-Type Temperature Module	**227-9919**	109.00
Kits			
FLK-CNX 3000 IND	Fluke CNX 3000 Industrial System	**227-9921**	739.00
FLK-CNX 3000 GM	Fluke CNX 3000 General Maintenance System	**227-9922**	519.00
FLK-CNX 3000 HVAC	Fluke CNX 3000 HVAC System	**227-9923**	499.00
FLK-CNX T3000 KIT	Fluke CNX t3000 Temperature Measurement Kit	**227-9924**	359.00
FLK-CNX I3000 KIT	Fluke CNX i3000 iFlex AC Current Measurement Kit	**227-9925**	379.00
FLK-CNX A3000 KIT	Fluke CNX a3000 AC Current Clamp Kit	**227-9926**	359.00
FLK-CNX V3000 KIT	Fluke CNX v3000 AC Voltage Kit	**227-9928**	359.00
Accessories			
FLK-CNX PC3000	PC Adapter	**227-9920**	39.00
FLK-CNX C3000	Premium Module Tool Bag	**227-9929**	59.00
FLK-CNX C3001	Soft Module Case	**227-9930**	15.00
FLK-CNX C3002	Soft DMM Modular Case	**227-9931**	25.00
FLK-CNX C3003	Soft Module 3 Compartment Case	**227-9932**	29.00

T90/110/130/150 Voltage and Continuity Testers

FLUKE



T90 T110 T130 T150

The new Fluke two-pole voltage and continuity testers are now more rugged and easier to use than ever before.

NEW

- Fast test results with large, easy-to-use buttons, bright backlights, and clear audible and physical indicators designed for any work situation
- Rugged - includes a heavy duty molded case, a thicker cord with wear indicator, sturdy battery case, and well-fitting and durable probe protector
- Enhanced ergonomic design with a quick and secure probe docking
- CAT IV 600 V, Cat III 690 V safety rating - comply with both regulation HSE GS 38 (tip caps) and IEC EN 61243-3: 2010
- 4 ways to detect ac/dc voltage with a LED indicator, a bright digital display of the measurement value, an audible continuity test, and vibration to give tactile feedback (vibration indicator on T110, T130, T150)
- Audio on/off for testing in quiet areas.
- Low battery indicator
- Detects voltage even with discharged batteries
- Phase rotation indicator for 3-phase systems
- RCD functionality
- Two-button controls to draw more current from the circuit under test and intentionally trip Residual-Current Devices (RCDs) remotely
- Display Hold (T130, T150)
- Built in electric torch (T110, T130, T150)
- Single-phase voltage for fast identification of live conductors
- Push-on probe tips, probe tip protector and storage accessory
- Resistance testing to 1999 ohms (T150)
- WearGuard™ insulation shows damage to test leads

Description	Mftrs. List No.	Order Code	Price Each 1+
Standard			
Fluke T90 Voltage / Continuity Tester	FLUKE-T90	**228-3697**	30.00
Fluke T110 Voltage Tester with Switchable Load	FLUKE-T110	**228-3698**	48.00
Fluke T130 Voltage Tester with LCD and Switchable Load	FLUKE-T130	**228-3699**	81.00
Fluke T150 Voltage Tester with LCD and Ohms	FLUKE-T150	**228-3701**	109.00
VDE Rated			
Fluke T110 Voltage Tester with Switchable Load	FLUKE-T110/VDE	**228-3702**	48.00
Fluke T130 Voltage Tester with LCD and Switchable Load	FLUKE-T130/VDE	**228-3703**	81.00
Fluke T150 Voltage Tester with LCD and Ohms	FLUKE-T150/VDE	**228-3704**	109.00

View our **NEW** interactive catalogue online
(compatible with iPad and Android Tablet devices)
uk.farnell.com/interactive-catalogue

Fluke VT02 Visual IR Thermometer

FLUKE

NEW

The new VT02 Visual IR Thermometer bridges the gap between low cost IR thermometers and higher priced thermal imagers and allows you to see beyond temperature at a price that's equally groundbreaking. Now, instead of the tedious tasks of taking and recording multiple, individual temperature readings, you get the complete picture with a blended visual and thermal image of your target area.

- Hyper-thin pyroelectric innovation pushes the limit of IR technology pioneering an array dense enough to create an infrared blended heat map
- Measure with confidence - gives you the visual image of exactly what you are measuring
- Detect issues instantaneously - Eliminate the task of taking multiple grid readings and manual temperature measurements thanks to the blended image that gives the complete picture and compares readings from different dates
- Pinpoint with hot and cold markers (1st bullet point) - captures a center point temperature measurement and hot and cold markers all at once with a click of a button
- Compact and intuitive, the point and shoot focus-free design allows efficient troubleshoot
- Up to 10,000 images on micro-SD card, easy download to PC and import into software
- Includes SmartView analysis and reporting software
- 4 standard AA cell batteries, for 8 hours of continuous battery life

Temperature measurement range	-10°C to 250°C
Detector type	Uncooled hyper-thin pyroelectric ceramic
Infrared spectral band	6.5µm to 14µm
Field of view	20° x 20°
Level and span	Auto
Storage medium	4GB micro SD card
Memory review	Scroll through all saved images and view on screen.
Operating temperature	-10°C to 45°C
Display	2.2"
Controls and adjustments	Select colour palette User selectable temperature scale (°F/°C) Time/date set Emissivity selection
Dimensions	210 x 75 x 55mm
Weight	300g

Kit Contents: Thermometer, Hard case, Micro-SD card, Micro-SD conversion adapter to standard, AA Batteries (Pk 4), Lanyard, Quick Start guides (EN, FR, DE, ES, Simplified Chinese), SmartView® analysis and reporting software CD and Manual and Quick Start Guide on CD (21 languages).

Mftrs. List No.	Order Code	Price Each 1+
FLUKE VT02	**225-4306**	549.00

Three Phase Power Quality and Energy Analysers

FLUKE

CALIBRATION SERVICES

Fluke 430 Series II

The 430 Series II power quality and energy analysers offer the best in power quality analysis and the ability to monetarily quantify energy losses. The Fluke 434, 435 and 437 Series II models help locate, predict, prevent, and troubleshoot power quality problems in three-phase and single-phase power distribution systems. Additionally, the Fluke-patented energy loss algorithm, Unified Power Measurement, measures and quantifies energy losses due to harmonics and unbalance issues, allowing the user to pinpoint the origin of energy waste within a system.

- Classic active and reactive power measurements, unbalance and harmonic power, are quantified to pinpoint true system energy losses in dollars (other local currencies available).
- Simultaneously measure AC output power and DC input power for power electronics systems using optional DC clamp.
- 435 and 437 Series II analyzers capture fast RMS data, show half-cycle and waveforms to characterize electrical system dynamics (generator start-ups, UPS switching etc.).
- 435 and 437 Series II models capture 100/120 cycles (50/60Hz) of each event that is detected in all modes, without set-up.
- 435 and 437 Series II analyzers capture 200 kHz waveform data on all phases simultaneously up to 6 kV.
- 435 and 437 Series II analyzers conduct tests according to the stringent international IEC 61000-4-30 Class-A standard.
- 435 and 437 Series II analyzers measure interference from ripple control signals at specific frequencies.
- 437 Series II analyzer captures power quality measurements for avionic and military power systems.
- Analyze the trends using the cursors and zoom tools.
- 600 V CAT IV/1000 V CAT III rated for use at the service entrance.
- With included four flexible current probes with enhanced thin flex designed to fit into the tightest places.
- Every measurement is always automatically recorded, without any set-up.
- Ten power quality parameters on one screen according to EN50160 power quality standard.
- Configure for any test condition with memory for up to 600 parameters at user defined intervals.
- View graphs and generate reports: With included analysis software.
- 7 hours operating time per charge on Li-ion battery pack.
- For more technical information, please refer to the technical datasheet on **www.farnell.com**

Contents: Power Quality and Energy Analyzer , Test lead set, Flexi current probes, Battery, Power adapter with international power adapter set, USB cable, PowerLog CD and case.

Mftrs. List No.	Description	Order Code	Price Each 1+
FLUKE-434-II	Three Phase Energy Analyzer	**207-9050**	3,872.00
FLUKE-435-II	Three Phase Power Quality and Energy Analyzer	**207-9049**	4,829.00
FLUKE-437-II	400Hz Three Phase Power Quality and Energy Analyzer	**207-9051**	6,569.00
Accessories			
BC430	Battery Charger	**921-0016**	97.00
OC4USB	USB Interface	**921-0032**	123.00
WC100	Coloured Lead Clips	**921-0059**	25.00
TLS430	Test Lead Set	**921-0067**	82.00

Ti100 Series Thermal Imager

FLUKE

NEW

A Fluke thermal imager can save you time and money by finding potential problems before they become costly failures. With the innovative features and functionality in the Fluke Ti125, Ti110, Ti105 and Ti100 imagers, you can perform infrared inspections faster and more efficiently and thoroughly document problem areas for additional follow-up.

Kit contents: Thermal imagers, SmartView® software, 2GB SD memory card, USB cable, Multi-function card reader (Ti125), 3m USB cable (Ti125), Hand strap, Lithium-Ion rechargeable batteries (1 for Ti100, Ti105 and Ti110; 2 for Ti125) and AC power adapter.

- 3.5" color LCD with clear protective cover and adjustable brightness for easy viewing most conditions
- Excellent thermal sensitivity (NETD) to see even the smallest temperature differences
- IR-Fusion® technology with AutoBlend mode for easier identification and reporting of problems
- Focus Free or IR-OptiFlex focus takes the hassle out of focusing
- One handed operation so your other hand is free
- IR-PhotoNotes™ photo annotation system for capturing important visible information
- Voice Recording for recording notes or important information
- Electronic Cardinal Compass to assist in describing location of problem
- SmartView® analysis and reporting software (with free upgrades through life of product)
- Removable 2 GB SD memory card for easy storage and transfer of thermal and visible images
- Direct transfer of images to PC via included USB cable for added convenience
- Quick access level/span adjustment for faster image optimization in the field
- Fast Auto Rescale in Manual Mode for quick adjustment in dynamic situations
- Designed to withstand a 2 m drop for everyday accidents
- Integrated lens cap, lens guard, hand strap, and protected display for added ruggedness
- High temperature, low temperature (dewpoint), and isotherm color alarms (Ti125 only)
- Transmission correction (Ti125 and Ti110 only!)
- Thumbnail view memory
- Multiple display options (Ti125, Ti110 and Ti105 only)
- Ultra-Contrast™ palette options (Ti125 and Ti110 only)
- .IS2, .BMP, and .JPG File formats on imager
- .IS3, and MPEG-encoded .AVI video formats on imager (Ti125 and Ti110 only!)
- Easily-accessible Imager information

Mftrs. List No.	Order Code	Price Each 1+
FLK-TI100 9HZ	**209-4466**	1,734.00
FLK-TI105 9HZ	**221-9206**	2,366.00
FLK-TI110 9HZ	**209-4467**	3,295.00
FLK-TI125 9HZ	**209-4468**	4,125.00
Accessories		
FLK-TI-VISOR2	**209-4469**	75.00
FLK-TI-TRIPOD2	**209-4470**	92.00
FLK-TI-SBP3	**209-4471**	118.00

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Complete cost control, reduced administration time, visibility of your spend, flexibility and personalised to your company's needs.
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Industrial Thermal Imagers

FLUKE

Ti27 & Ti29

NEW

NEW LOWER PRICES* *While Stock Lasts

The greatest technological advancement in thermography may be how Fluke has made it so simple to capture images and analyze data right out of the box. With just a push of your thumb, go from one handed manual smart focus to adding picture-in-picture and even add comments in your own voice. The Fluke Ti27 and Ti29 offers the only on-camera blended infrared with patented Fluke IR-Fusion® technology precisely aligning visible and IR images to better diagnose issues.

- Delivers the clear, crisp images needed to find problems fast
- Identify even the smallest temperature differences that could indicate problems with industry-leading thermal sensitivity (NETD).
- Automatic alignment (parallax correction) of visual and infrared images with Fluke patented IR-Fusion®
- Optional telephoto and wide angle lenses available for added versatility and special applications. (easily installable in the field)
- Field replaceable batteries give you maximum flexibility no matter where your work takes you
- Intuitive, three-button menu is easy to use - simply navigate with the push of a thumb
- No need to carry pen and paper - record findings by speaking into the imager. Voice annotations can be recorded with every image you take. Voice comments are saved along with individual images for future reference
- One-handed focus capability, emissivity correction, reflected background temperature compensation, and transmission correction increase the accuracy of measurements in most situations
- Adjustable hand strap for left-or right-handed use
- Optimized for field use in challenging work environments
- Engineered and tested to withstand a 2 m drop
- Withstands dust and water - tested to an IP54 rating
- For more technical information, please refer to the technical datasheet on **www.farnell.com**

Kit Contents: Thermal imager with standard infrared lens, AC power supply and universal battery pack charger, 2 lithium ion battery packs, SD memory card, multi-format USB memory card reader, SmartView® software, hard carrying case, soft transport bag, adjustable hand strap, printed users manual and warranty registration card.

Description	Order Code	Price Each 1+
Ti29 Thermal Imager	**190-3547**	5,131.00
Ti27 Thermal Imager	**190-3549**	4,499.00
Accessories		
Telephoto Infrared Lens	**190-3551**	1,125.00
Wide-angle Infrared Lens	**190-3552**	1,125.00

Infrared Thermometers

FLUKE

Fluke 62 Max

NEW

- Dust and water-resistant
- 3 meter drop tested
- Display in °C or °F
- Ergonomically designed
- Will clip to your tool belt or belt loop or easily fits into your tool box
- Precise laser technology makes for more accurate and repeatable measurements
- Fluke 62 Max+ has dual rotating lasers to help you identify an area to be measured
- Large and backlit display
- Displays the minimum, maximum or average temperature, or the difference between two measurements
- Hi and Lo alarms for rapid display of measurements outside the limits

	62 Max	62 Max+
Temperature range	-30°C to 500°C	30°C to 650°C
Accuracy	±1.5°C or ±1.5% of reading	±1.0°C or ±1.0% of reading
Response time (95%)	<500ms	<300ms
Optical resolution	10:1	12:1
Display resolution	0.1°C	
Power	AA battery	
Battery life	10 hours	8 hours
Dimensions	175x85x75mm	
Weight	255g	
Operating temperature	0°C to 50°C	
IP rating	IP54	

Mftrs. List No.	Type	Order Code	Price Each 1+
FLUKE-62 MAX	Single Laser	**211-8264**	83.00
FLUKE-62 MAX +	Dual Laser	**211-8265**	99.00

Thermal Imaging Camera, Ti9

FLUKE

The Fluke Ti9 Electrical - Thermal Imager provides a full picture of many problems in installing, repairing and verifying electrical and mechanical equipment.

Included Accessories:

- SmartView™ analysis and reporting software
- 2 GB SD Memory Card
- SD Card Reader for downloading images into your computer
- Rugged hard carry case and portable soft carry case
- Hand strap
- Rechargeable internal battery
- AC charger/power supply
- Printed Users Manual

Features and Benefits:

- Rugged and Reliable: Engineered to withstand a 2 metre (6.6 feet) drop
- Excellent thermal sensitivity for seeing even small temperature differences (which could indicate problems)
- 640 x 480 large 3.6" diagonal color LCD display (landscape format)
- Temperature measurement ranges for most Industrial and Commercial applications
- SmartView™ analysis and reporting software (with free upgrades through life of product)
- Removable 2 GB SD Memory Card for easy storage and transfer of thermal and visible images
- Complete solution includes hardware and software to get you going
- Two-year warranty
-

Imaging performance	
Thermal: Field of View (FOV)	23° horizontal x 17° vertical
Minimum focus distance	Thermal lens: 15 cm
Thermal sensitivity (NETD)	<0.2 °C at 30 °C (200 mK)
Minimum span (Auto/Manual)	10 °C/5 °C
Focus	Manual
Detector size	160 x 120
Visual (Visible light) camera	640 x 480 pixels, full color
Temperature measurement	
Temperature range	-20°C to +250 °C (-4 °F to +482 °F)
Accuracy	± 5 ° C or 5 % (whichever is greater)
Measurement modes	Center point
Image presentation	
Digital display	9.1 cm (3.6 in) diagonal landscape color VGA (640 x 480) LCD
LCD backlight	Selectable bright or auto
Palettes	Ironbow, blue-red, high contrast, grey
Power	
Battery type	Internal rechargeable battery (included)
Battery operating time	3 to 4 hours continuous operation
Environmental and mechanical design	
Operating temperature	-10 °C t o +50 °C (+14 °F to +122 °F)
Storage temperature	-20 °C to +50 °C (-4 °F to +122 °F)
Relative humidity	Operating and storage 10 % to 90 %, non-condensing
Water and dust resistant	IP54
Two meter (6.6 feet) drop test	Yes
Protective lens cover	Yes
Weight (including battery)	1.2 kg (2.6 lbs)
Imager size (HxWxD)	267 mm x 127 mm x 152 mm (10.5 in x 5.0 in x 6.0 in)

Mftrs. List No.	Order Code	Price Each 1+
FLUKE TI9	**170-0079**	2,208.00

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